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Vol. 69

November 1990

NEW YORK No. 5

BOTANICAL GARDEN

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Published by Michael J. Warnock
185 Westridge Drive Huntsville, Texas 77340 U.S.A.
PHYTOLOGIA is printed on acid free paper.

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PHYTOLOGIA (ISSN 00319430) is published monthly by Michael J. Warnock, 185 Westridge Drive, Huntsville, TX 77340-8916. Second Class postage at Huntsville, TX. Copyright ©1990 by PHYTOLOGIA. Domestic individual subscription (6 issues): \$18.00. Domestic institutional subscription (6 issues): \$20.00. Foreign and/or airmail postage extra. Single copy sales: Current issue and back issues volume 67 to present, \$3.50; Back issues (previous to volume 67), \$3.00 (add \$.50 per copy postage and handling US [\$1.00 per copy foreign]). Back issue sales by volume: \$17.00 per volume 42-66 (not all available as complete volumes); \$21.00 per volume 67-present; add \$2.00 per volume postage US (\$4.00 per volume foreign). POSTMASTER: Send address changes to Phytologia, 185 Westridge Drive, Huntsville, TX 77340-8916.

MISCELLANEOUS NOTES ON NEOTROPICAL FLORA, XIX. COMBINATIONS IN SENECEIONEAE, COMPOSITAE

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ABSTRACT

Eight new transfers are made of Andean Senecioneae from *Culcitium*, *Gynozys*, and *Senecio* to *Lasiocephalus*, *Paragynozys*, and *Pentalia*. One new synonym is cited.

KEY WORDS: Senecioneae, Compositae, Andes, new combinations

Continuing study of Andean Senecioneae shows need for the following new combinations.

Lasiocephalus sodiroi (Hieron.) Cuatrec., *comb. nov.* BASIONYM: *Culcitium sodiroi* Hieron., Bot. Jahrb. Syst. 29:63. 1900. *Senecio sodiroi* (Hieron.) Cuatrec., Fieldiana, Bot. 27(1):45. 1950. TYPE: B-now destroyed (photo F #18150). LECTOTYPE (here designated): ECUADOR. legit Riobamba, *Sodiro* (P). Lectotype agrees with protologue and phototype.

Additional specimen: ECUADOR. Pichincha: Camino N hacia la cumbre del Cerro Corazón, bosque pluvial subandino, 3200-3500 m, subarbusto 20 cm, capítulo color verde-agua, 19-20 Abril 1987, *Cerón & Mena 1214* (US). This excellent collection matches perfectly with the description and phototype.

Lasiocephalus otophorus (Wedd.) Cuatrec. var. ***christophori*** (Cuatrec.) Cuatrec., *comb. nov.* BASIONYM: *Senecio otophorus* Wedd. var. *christophori* Cuatrec., Fieldiana, Bot. 27(2):22. 1951. TYPE: COLOMBIA. (HOLOTYPE: NY!; Isotypes: F!, US!).

New locality: COLOMBIA. Nevado del Cocuy, Chorreon de San Paulino, 3750 m, woods on southern slopes, upper level of wet Andean forest, 10 Sep 1938, *Cuatrecasas 1330* (F, US). The specimen is a felty, lanate form only found at high elevations.

Pentacalia scaphiformis (Greenm.) Cuatrec., *comb. nov.* BASIONYM: *Senecio scaphiformis* Greenm., Ann. Missouri Bot. Gard. 25:817-818. 1938. TYPE: *Lehmann #B.T.498* (HOLOTYPE: K; Isotype: NY [photo F, #40676]).

Specimens examined: COLOMBIA. Cauca: Cordillera Central, vertiente occidental, Páramo de Moras, 3700-3730 m, frútex con tallos torcidos y péndulos, muy ramosos, ramas largas foliadas, verde claras o con manchas violáceas, hojas coriáceo-crasas, recurvadas, frágiles, verde semimates haz, muy claras envés, nervio medial envés y peciolo violáceo, pedicelos e involucros verde pálidos, corolas amarillas, 17 Feb 1969, *Cuatrecasas & Lehmann 27363* (COL, US); Same locality, 3600 m, frutex bejucoso echado sobre rocas, hoja crasa verde vivo mate haz, inflorescencias grandes muy vistosas, con ramas, pedúnculos e involucros de color verde apagado, filarias aparentemente adheridas, con punta violácea, lígulas amarillo vivo, flósculos amarillos, estilos amarillos, 19 Mar 1973, *Cuatrecasas & Lehmann 28637* (COL, US); Same locality, 3700-3600 m, Bejuco trepando sobre rocas, hoja crasa verde, involucro verde claro, lígulas radiantes amarillas, 24 Jan 1978, *Cuatrecasas 28781* (US).

Pentacalia beckii (Cabrera) Cuatrec., *comb. nov.* BASIONYM: *Senecio beckii* Cabrera, *Hickenia* 2(4):15, fig. 2. 1984. TYPE: BOLIVIA. *G. Beck 1822* (HOLOTYPE: SI).

Pentacalia yungasensis (Britton) Cuatrec., *comb. nov.* BASIONYM: *Senecio yungasensis* Britton, Bull. Torrey Bot. Club 19:264. 1892. TYPE: BOLIVIA. *Rusby 1719* (HOLOTYPE: NY; Isotype: US!).

Pentacalia rosmarinifolia (Benth.) Cuatrec., *comb. nov.* BASIONYM: *Culcitium rosmarinifolium* Benth., *Pl. Hartwegianae* 207. 1845. TYPE: ECUADOR. "juxta Hacienda del Isco in ascensu montis Antisana," *Hartweg 1152* (G [photo F, #28804], P!).

Senecio romeroides Cuatrec., *Fieldiana, Bot.* 27(1):45. 1950.

Pentacalia chulumanica (Cabrera) Cuatrec., *comb. nov.* BASIONYM: *Senecio chulumanicus* Cabrera, *Hickenia* 2(4):17-18. 1984. TYPE: BOLIVIA. *Beck 4875* (LPB, SI).

Pentacalia polymera (Klatt) Cuatrec., *Phytologia* 49(3):257. 1981.

Diplostephium flavidum Badillo, *Ernstia* 31:1-2. 1985. TYPE: *Tillet 747-998* (HOLOTYPE: MY; Isotypes: MYF, US!). New synonym.

Paragynoxys lopezii (Dillon & Sagástegui) Cuatrec., *comb. nov.* BASIONYM: *Gynoxys lopezii* Dillon & Sagástegui, *Brittonia* 40(2):223-225, fig. 2. 1988. TYPE: PERÚ. *López & Sagástegui 8160* (HOLOTYPE: HUT; Isotype: F).

In this interesting species the heads are homogamous with few phyllaries and flowers (5), the corolla lobes are linear, cut to the base of the limb, the stylar branches are obtuse or conic, lacking the typical penicillate projection of *Gynozys*, and the leaves are alternate. This combination of characters place the species in *Paragynozys*. The species represents an extension of the known range of this northern Andean genus to Perú. The small leaves and habit of this species are at the end of a progressive reduction of size within the area of the genus, from western Venezuela, across Colombia, to Dep. Libertad in NW Perú.

CERTAMEN MELASTOMATACEAE XXXIX

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ABSTRACT

The following new species of South American Melastomataceae are described and affinities discussed: *Meriania broccha* (Venezuela); *Macrocentrum huberi* (Venezuela); *Tibouchina huberi* (Venezuela); *Miconia aymardii* (Venezuela); *Miconia laciniata* (Perú); *Miconia elvirae* (Venezuela); *Miconia silverstonei* (Colombia); *Alloneuron dorrii* (Ecuador); *Huilaea ecuadorensis* (Ecuador); *Leandra gorzulae* (Venezuela); *Blakea vallensis* (Colombia).

KEY WORDS: Melastomataceae, Colombia, Ecuador, Perú, Venezuela, *Alloneuron*, *Blakea*, *Huilaea*, *Leandra*, *Macrocentrum*, *Meriania*, *Miconia*, *Tibouchina*.

Meriania broccha Wurdack, sp. nov. TYPE: B.M. Boom, A.L. Weitzman, & C. Brewer-Carías 5512, collected near Neblina Camp I on northwest plateau, 8.5 km NE of Base Camp, 0° 52' N, 66° 05' W, Cerro de la Neblina, Terr. Amazonas, VENEZUELA, elev. 1920-1880 m, 1 Feb 1985. "Corolla pinkish purple." (HOLOTYPE: VEN!; Isotype: US!).

M. neblinensi Wurdack affinis, petiolis brevioribus, calycis lobis interioribus longioribus, dentibus exterioribus prominenter eminentibus ovarii collo evoluto differt.

Frutex 0.3-1.0 m. Indumentum ut in *M. neblinensi*. Petioli 0.5-1.0 cm longi; lamina (4-)6-8 X (2.0-)2.5-4.5 cm late lanceata vel oblango-elliptica apice acuto vel obtuso basi obtusa, rigida et integra, 3(-5) nervata. Inflorescentia terminalis 5-7 flora, floribus 5-meris, pedicellis ca. 5 mm longis, bracteolis 5-7 X 1-2 mm subsistentibus. Hypanthium (ad torum) 7 mm longum hebetate 10-costatum; calycis tubus ca. 1 mm longus, lobis interioribus 4-7

X 3-4 mm ovato-oblongis, dentibus exterioribus crassis 5-9 mm eminentibus. Petala 21-22 X 15-17 mm glabra i.s. paulo verruculosa oblongo-obovata apice rotundato-truncato. Stamina dimorphica glabra; filamenta 13.0 mm vel 15.5 mm longa; antherarum thecae declinatae subulato-curvatae uniporosa (poro dorsaliter inclinato 0.15-0.20 mm diam.) 11 X 1.3 mm vel 7.5-8.0 X 1.3 mm, connectivo 0.3-0.4 mm prolongato dorsaliter dente 0.4 mm vel 0.2 mm alto et appendice ascendenti hebeti per 3.7-4.0 mm vel 3.0-3.5 mm libera armato. Stigma non expansum; stylus 15 X 0.5-0.1 mm glaber in ovarii collum 0.5 mm immersus; ovarium 3-loculare glabrum.

Paratypes (both VENEZUELA, Cerro Neblina): *R. Liesner 16015*, Camp III, elev. 1750-1850 m (US!, VEN!, fruiting); *Boom & Weitzman 5750*, Camp X, elev. 1670-1690 m ("Corolla pinkish purple; anthers yellow, connective dark purplish black with whitish edges and tips") (US!, VEN!).

The suggested relative, still known only from the holotype, has petioles 2-4 cm long, ovate interior calyx lobes 2 mm long with nonprojecting external teeth, smaller stamens, and truncate ovary apex. The stamens in both species are qualitatively similar, with blunt ascending connective appendage and anther pores in both series dorsally inclined. The epithet alludes to the projecting calyx teeth. In Cogniaux' arrangement, *Meriania broccha* would key to near the Bahian (Brazil) *M. calophylla* (Cham.) Triana, which has petioles 2-4 cm long, somewhat thinner blades, terete hypanthia, shorter (2.0-2.5 mm) interior calyx lobes, and somewhat smaller stamens.

Macrocentrum huberi Wurdack, *sp. nov.* TYPE: *O. Huber & L. Izquierdo 12771*, collected on granite in NE sector of Sierra de Maigualida, headwaters of Río Chajura (west affluent of Río Erebató), Dto. Cedeño, Edo. Bolívar, VENEZUELA, 5° 33' N, 65° 13' W, elev. 2100 m, 13 Nov 1988. "Pedicelo e hypanthio verde claro-rosado, corola lila intenso vistosa, estambres amarillento. Frutos rojo claro. Hojas carnosas." (HOLOTYPE: VEN!; Isotype: US!).

M. anychioidi Gleason et *M. maguirei* Wurdack affinis, foliorum laminis esetulosis et eciliatis pedicellis longioribus differt.

Suffrutex 0.2-0.4 m, ramulis sicut foliis hypanthiisque sparse glandulis deciduis obsitis; ramulorum internodi esetosi, nodis obscure caduceque setulosi. Folia in quoque jugo essentialiter isomorphica; petioli 1-2 mm longi; lamina (0.8-)1.2-1.5 X (0.25-)0.40-0.60 cm apice hebeti-acuto basi acuta, coriacea et integra esetosa uninervata. Flores 4-meri in ramulis foliosis terminales solitarii, pedicellis ca. 1.5 cm longis infra bracteolas et 2 mm longis supra bracteolas, bracteolis ca. 5 X 1.5-1.6 mm subpersistentibus; hypanthium (ad torum) 2.5 mm longum 8-costatum; calycis tubus

0.5 mm longus extus ad torum setulosus, lobis interioribus 2.6 X 3.8 mm oblati ca. 0.5 mm imbricatis glanduloso-ciliolatis, dentibus exterioribus non eminentibus. Petala glabra 8.3-8.5 X 7.2-7.8 mm obovata apice truncato. Stamina isomorphica glabra; filamenta 3.3 mm longa; antherarum thecae 1.5-1.6 X 0.35 mm, connectivo 0.3 mm prolongato dente dorsali 0.25 mm longo. Stigma non expansum; stylus 5.5 X 0.15-0.20 mm glaber in ovarii collo ca. 0.2 mm immersus; ovarium 3-loculare glabrum; fructus 0.8-0.9 cm longus.

Both suggested relatives have at least young leaves ciliate and obscurely serrulate (but 1 nerved) and pedicels only 3-6 mm long. *Macrocentrum anychioides* Gleason (now known also from Cerro Marahuaca, *Liesner 17650*) also has larger petals and anthers, while *M. maguirei* Wurdack has smaller petals and anthers.

Tibouchina huberi Wurdack, *sp. nov.* TYPE: *O. Huber 12686*, collected on northwest part of Serra de Maigualida in headwaters of Río Iguana (affluent of Río Asisa), Dep. Atures, Terr. Amazonas, VENEZUELA, 05° 43' N, 65° 19' W, elev. 1720 m, 25 Mar 1988. "Sufrútice de 0.5-1 m, muy ralo, frecuente in matorral. Hypanthio rojizo, corola morada, estambres blanco crema." (HOLOTYPE: VEN!; Isotype: US!).

T. fraternae N.E. Brown affinis, foliorum laminis supra aequaliter strigulosis non striolatis floribus maioribus differt.

Fruticosa 0.5-1.0 m; ramuli sicut petioli et laminarum subtus venae primariae squamis lanceatis ca. 1.0-1.5 mm longis vix ciliolatis dense strigosi. Petioli 3-5(-7) mm longi; lamina 1.5-2.5(-4.5) X 1(-2) cm elliptica apice acuto vel anguste obtuso basi obtusa, coriacea, supra modice et aequaliter strigulosa pilis ca. 2/3 adnatis parte libera ca. 0.5-0.7 mm longa essentialiter laevi, subtus in superficie sparsiuscule appresso-setulosa pilis sublaevibus parte libera ca. 0.5-0.7 mm longa, 3-nervata nervis secundariis nervulisque non visis. Flores 5-meri in ramulis 1-5 terminales supra bracteas ca. 1.5 mm pedicellati, bracteis duabus liberis ca. 12 X 4.5 mm ovato-oblongis extus strigulosis intus apicaliter per 1/2 strigulosis. Hypanthium (ad torum) 7 mm longum extus densissime squamis dense ciliolatis ovatis 2-3 mm longis ca. 1 mm acuminatis obsitum; calycis tubus ca. 0.5 mm longus, lobis persistentibus 6.5 X 2.5 mm lanceatis intus glabris vel sparsissime strigulosis. Petala ca. 16 X 10-11 mm obovata breviter glanduloso-ciliolata extus ad basim sparse squamato-strigulosa. Stamina paulo dimorphica glabra, thecis (paulo immaturis) 8.0 mm vel 6.8 mm longis attenuatis ventraliter porosis (0.3 mm), connectivo infra thecas 3.2 mm vel 2.0 mm prolongato ad basim ventraliter 0.5-0.6 mm bilobato. Stigma

punctiforme; stylus 10 mm longus glaber; ovarium in parte 2/3 apicali dense sericeo-strigosum.

Paratypes (both VENEZUELA): *Huber 12742*, NE sector of Sierra Maigualida, headwaters of Río Chajura (affluent of Río Erebató), Dto. Cedeño, Edo. Bolívar, 05° 33' N, 65° 13' W, elev. 2100 m, 28 Mar 1988 (US!, VEN!); *F. Cardona 2931*, Cerro Ualipano, headwaters of Río Parucito, Terr. Amazonas, 6° N, 65° 43' W, elev. 1400-1700 m, Feb 1962 (US!).

The suggested relative has leaf blades striolate above and with sparse lines of squamae between the costa and lateral primary veins, calyx lobes ca. 4-5 mm long, and petals 11-14 X 6.5-7.5 mm. *Tibouchina dissitiflora* Wurdack has hypanthial pubescence rather like that in *T. huberi*, but leaves above striolate and unevenly pubescent, and beneath completely covered by squamae.

Miconia aymardii Wurdack, *sp. nov.* TYPE: *G. Aymard*, *R.F. Ortega*, & *R. Rivero 4412*, collected at the limits of Páramo de Guaramacal and cloud forest 25 km SE of Boconó, Edo. Trujillo, VENEZUELA, elev. 2200-2600 m, 23 Jan 1986. "Arbusto, pétalos blancos, estambres morados." (HOLOTYPE: PORT!; Isotype: US!).

Sect. *Amblyarrhena*. *M. trujillensi* Wurdack affinis, hypanthiis persistenter setulosis calycis dentibus exterioribus eminentibus stylis puberulis differt.

Ramuli primum obtuse quadrangulati demum teretes sicut foliorum subtus venae primariae inflorescentiaque densiuscule pilis subclavatis apicem versus asperis 0.10-0.25 mm longis setulosi. Petioli 0.7-1.2 cm longi; lamina (3.0-)4.0-5.5 X (1.5-)2.0-3.0 cm, anguste elliptico-ovata apice hebeti-acuto basi rotundato-obtusa, subrigida et subintegra ca. 0.4 mm appresso-ciliolata, supra glabra, subtus in venis secundariis sparse aspero-puberula in superficie glabra, 5 nervata vel inconspicue (usque ad 2-3 mm) plinervata nervis secundariis 1-2 mm inter se distantibus nervulis modice reticulatis (areolis 0.7-1.0 mm latis). Panicula 9-12 cm longa submultiflora; flores 4-meri, pedicellis crassis ca. 1 mm longis, bracteolis ca. 1.5 mm longis lanceatis caducis. Hypanthium (ad torum) 2.6 mm longum sparsiuscule aspero-setulosum (pilis 0.1-0.2 mm longis); calycis tubus 0.4 mm longus, lobis interioribus 1 mm longis semiorbicularibus dentibus exterioribus crassis setulosis ca. 0.5-0.7 mm eminentibus; torus intus glaber. Petala 2.7-2.8 X 1.9-2.0 mm late obovato-oblonga glabra. Stamina isomorphica glabra; filamenta ca. 2.8 mm longa; antherarum thecae 1.9 X 0.6 X 0.5 mm oblongae vix retusae poro 0.15 mm diam. paullulo dorsaliter inclinato, connectivo ca. 0.4-0.6 mm prolongato exappendiculato. Stigma non expansum; stylus 6.8 X 0.25-0.30 mm sparse glanduloso-puber-

ulus (pilis 0.15-0.20 mm longis) in ovarii collo 0.5 mm immersus; ovarium 4-loculare et ca. 0.6 inferum glabrum.

The suggested relative has glabrous hypanthia, external calyx teeth not projecting, and glabrous styles; both species occur on the Páramo de Guara-camal. *Miconia arbutifolia* Naudin is perhaps more distantly related (albeit with emergent external calyx teeth), being much less pubescent with relatively narrower leaf blades and glabrous styles; *M. albertii* Gleason has rather similar pubescence but relatively narrower leaf blades, glabrous hypanthia and styles, and nonemergent external calyx teeth.

Miconia laciniata Wurdack, sp. nov. TYPE: A. Sagástegui, J. Guevara, & J. Santisteban 12994, collected in Bosque Monteseco, Chorro Blanco, Prov. Santa Cruz, Depto. Cajamarca, PERÚ, elev. 2000 m, 24 May 1987. "Arbusto de unos 3 m de alto con flores blancas." (HOLOTYPE: US 3198397!; Isotypes: F!, HUT!)

Sect. *Cremanium*. *M. mediae* (D. Don) Naudin in antherarum forma affinis, foliis distincte plinervatis in venarum axillis glabris ovario 5-loculare differt.

Ramuli primum hebeti-quadrangulati demum teretes sicut foliorum superficies hypanthiaque glabri; ramulorum nodi processibus stipuliformibus induti; processus ad basim ca. 1.5 mm coaliti, laciniis 1.5-2.5 X 0.20-0.25 mm. Petioli liberi 0.5-1.0 cm longi glabri; lamina 7-11 X (2.5-)3.0-4.5 cm apice 0.5-1.0 cm acuminato basi anguste acuta, firme membranacea et subintegra appressociliolata, ubique in superficie glabra, 5-plinervata (paribus exterioribus debilibus inclusis) pari interiore 0.5-1.0 cm supra basim divergenti venis secundariis principalibus 3-5 mm inter se distantibus nervulis lax reticulatis (areolis 1.0-1.5 mm latis). Panicula 4-6 cm longa submultiflora ramis 2-4 in quoque nodo; flores 5-meri, pedicellis 2.0-3.3 mm longis ca. 0.3-0.4 mm infra hypanthium articulatis, bracteolis ca. 2.5 X 0.5 mm caducis. Hypanthium (ad torum) ca. 3.1 mm longum et ca. 1.8 mm infra torum paulo contractum; calycis tubus 0.2 mm altus, lobis interioribus ca. 0.2 mm altis oblati, dentibus exterioribus minutis non eminentibus. Petala glabra 1.7-2.0 X 2.0-2.1 mm suborbicularia apice paullulo retuso. Stamina paulo dimorphica glabra; filamenta ca. 2 mm longa; antherarum thecae 1.5-1.6 X 1 mm late biporosae, connectivo ad basim ventraliter 0.2-0.3 mm hebeti-bilobulato dorsaliter dente hebeti 0.2 mm vel 0.7 mm armato. Stigma capitellatum 0.6 mm diam.; stylus 4.7 X 0.30-0.35 mm glaber; ovarium 5-loculare et omnino inferum glabrum.

Miconia media (D. Don) Naudin has estipulate branchlet nodes, basally nerved (or barely pseudo-plinerved) leaf blades beneath, setulose in the primary vein axils, calyx lobes 0.4-0.6 mm long, and ovaries 3 celled. In hypanthial constriction, *M. laciniata* resembles *M. crocea* (Desr.) Naudin (7-8-merous flowers) and *M. grayana* Cogn. (6-merous flowers), both of which have larger petals and stamens as well as glandular-puberulous styles and ovary apices and lack pectinate nodal appendages. *Miconia trichogona* Macbride does not seem closely related to *M. laciniata*, having merely setose branchlet nodes, setose petioles, leaf blades with rounded bases and basal primary veins, no hypanthial constriction below the torus, and only partially inferior ovary.

Miconia elvirae Wurdack, *sp. nov.* TYPE: J.L. Luteyn & Elvira Cotton 9635, collected on steep slopes in montane forest 17 km beyond junction with highway NE of Boconó, Páramo Guaramacal, Dto. Boconó, Edo. Trujillo, VENEZUELA, ca. 9° 13' N, 70° 13' W, elev. 2720 m, 13 Mar 1984. "Shrub to 1.5 m tall. Stipular areas reddish. Petals white. Filaments rose. Common, but little in flower." (HOLOTYPE: VEN 232357!; Isotypes: NY!, US!).

Sect. *Cremanium*. *M. polyneurae* Triana et *M. auritinodae* Wurdack affinis, foliorum venulis subtus laxe reticulatis differt.

Frutex vel arbor 1.5-3.0 m; ramulorum internodiateretes glabri, nodis tumidis et auriculis (cingulis) 0.4-0.5 cm longis infra petiolorum insertiones armatis. Petioli (1.5-)2.0-3.5 cm longi; lamina 6-12 X 4-6 cm, elliptica vel oblongo-elliptica apice obtuso vel rotundato-obtuso basi late acuta vel obtusa, coriacea et obscure distanterque crenulato-serrulata appresso-ciliolata (ciliis 0.2-0.4 mm longis), in superficie venulisque esetosa (primum sparse furfuracea mox glabrata), subtus sparse glanduloso-punctata, breviter (0.3-0.6 cm) 3 pseudo-plinervata (pari exteriori debili neglecto) nervis secundariis 3-5 mm inter se distantibus nervulis subtus laxe reticulatis (areolis 2-3 mm latis). Panícula 7-12 cm longa submultiflora glabra ramis primariis 2 per nodum; flores 5-meri, pedicellis 1 mm longis, bracteolis 4.0-5.5 X 2 mm caducis. Hypanthium (ad torum) 3.3 mm longum glabrum; calycis tubus 0.4 mm longus, lobis interioribus 0.5 mm longis oblatis obscure glanduloso-ciliolatis dentibus exterioribus appressis crassis non eminentibus. Petala 2.5-2.7 X 1.9-2.0 mm oblongo-orbicularia apice paullulo retuso apicaliter obscure glanduloso-marginata. Stamina obscure dimorphica glabra; filamenta ca. 2.4 mm longa; antherarum thecae 1.8 vel 1.9 X 1.0 X 0.7 mm obovato-oblongae late biporosae, connectivo ad basim dente dorsali hebeti erecto et appendice ventrali bilobulata 0.35 mm longa ornato. Stigma capitellatum 0.9-1.0 mm diam.; stylus

5.0-5.3 X 0.45-0.70 mm glaber in ovarii collo ca. 0.2 mm immersus; ovarium 3-loculare et ca. 1/3 inferum cono 1 mm alto glabro.

Paratypes (all VENEZUELA): *Stergios, et al. 4803* (US!) and *Dorr, et al. 5012* (NY!, US!), both nearly topotypical, elev. 2800-2900 m; *J.J. Wurdack, et al. 2767*, from subpáramo above Piñango, Dto. Miranda, Edo. Mérida, elev. 2900 m, (US!, VEN!).

Both suggested Colombian relatives have leaf venule areoles 0.3-0.6(-1) mm wide; *Miconia polyneura* Triana has branchlets and primary leaf veins beneath sparsely dendroid-puberulous, smaller nodal stem auricles (elevated 1-2 mm), and petals fimbriate apically, while *M. auritinoda* Wurdack has longer and denser leaf ciliation, smaller flowers (hypanthium ca. 2.2 mm long, petals ca. 2.2 mm long, anther thecae ca. 1.2 mm long), and a completely inferior ovary. *Miconia manicata* Gleason is more distantly related (smaller branchlet node auricles, smaller leaves and flowers). The Dorr and Wurdack paratypes of *M. elvirae* are fruiting (28 April, 16 November), while the Stergios material is in young bud (25-26 November).

Miconia silverstonei Wurdack, *sp. nov.* TYPE: *F.A. Silverstone-Sopkin, N. Paz, R. Eriksson, & J. Knudsen 3849*, collected in disturbed vegetation on the eastern slopes of the Cordillera Occidental at Las Amarellas near base of Cerro del Inglés, Serranía de los Paraguas, Mun. El Cairo, Depto. El Valle, COLOMBIA, elev. ca. 2070 m, 31 Mar 1988. "Arbusto 90 cm altura; flores blancas, fruto azul-violeta o rojo-violeta." (HOLOTYPE: CUV 13460!; Isotypes: CUV!, US!).

Sect. *Chaenopleura*. *M. hymenantherae* Triana affinis, ramulis et foliis glabris foliis sessilibus amplexicaulibus petalis minoribus differt.

Ramuli teretes in nodis sicut folia primum sparse vel modice glandulis minutis caducis obsiti alioqui glabri. Folia sessilia; lamina (5-)7-12 X (2-)3-5 cm lanceata vel oblongo-lanceata apice gradatim per 1.0-2.5 cm acuminato basi 3-5 mm cordata, firme membranacea et integra distanter ciliolata (0.2 mm), in superficie glabra 3 nervata (pari exteriore tenui inframarginali neglecto) nervis secundariis plerumque 3-5 mm inter se distantibus nervulis subtus demum paulo elevatis laxe reticulatis (areolis plerumque 2-3 mm latis). Panicula 3-5 cm longa submultiflora; flores 5-meri, pedicellis 1.0-1.5 mm longis, bracteolis 2-4 X 0-1.2 mm usque ad anthesim persistentibus. Hypanthium (ad torum) 1.5 mm longum intus costulatum; calycis tubus 0.2 mm longus, lobis interioribus 0.5 X 1 mm oblatis, dentibus exterioribus crassis inframarginalibus. Petala 1.5-1.7 X 1.4-1.5 mm suborbicularia glabra. Stamina essentialiter isomorphica glabra; filamenta 1.5 mm longa; antherarum thecae 0.3

X 0.4 mm late porosae, connectivo 0.25 mm prolongato ad basim ventraliter tuberculato dorsaliter dente bilobulato 0.25 mm longo armato. Stigma vix expansum 0.4 mm diam.; stylus 1.7 X 0.35 mm glaber in ovarii collo 0.2 mm immersus; ovarium 3-loculare et 9/10 vel omnino inferum glabrum.

Paratypes (both along the Ansermanuevo-San José del Palmar Road, Chocó, COLOMBIA): *Forero, Jaramillo, Pabón, Espina, & Piñeros 2185*, Alto de Galapago near Valle del Cauca boundary, elev. 2100 m ("Arbusto de 1.2 m. Frutos verdes con tinte vino tinto. Bosque nublado") (COL!); *Lozano & Díaz 3166*, Km 55, elev. 1950-1700 m ("Subfrutex semireclinado de 1 m. Tallos verde pálido con tinte vinaceo, haz verde oscuro opaco, envés verde pálido, margen foliar rojo, hipanto, cáliz verde pálido, pétalos y estambres blanco con tinte rosado." (COL!, US!)).

Miconia hymenantha Triana has petiolate (1.0-0.5 cm) smaller leaves with the veins beneath setulose and petals 3.2-4.0 mm long. All of the other recently described 5-merous species of sect. *Chaenopleura* (*M. concinna* Almeda, *M. confertiflora* Almeda, *M. corazonica* Wurdack, *M. haughtii* [Gleason] Wurdack, *M. popayanensis* Wurdack, *M. superposita* Wurdack) have petiolate leaves. The general vegetative aspect of *M. silverstonei* is like that of *M. asclepiadea* Triana (Sect. *Amblyarrhena*, with much larger flowers and oblong minutely pored anthers).

Alloneuron dorrii Wurdack, *sp. nov.* TYPE: *L.J. Dorr & I. Valdespino 6604*, collected on new road to Zamora, banks of Río Zamora ca. 25 km east of Loja, Prov. Zamora-Chinchipec, ECUADOR, 4° 00' S, 79° 13' W, elev. 2090 m, 11 Jul 1989. "Small tree 4-5 m tall. Petals white; anthers yellow." (HOLOTYPE: NY!; Isotype: US!, 4 additional isotypes to be distributed).

A. bullato Wurdack affinis, foliorum laminis proportionaliter angustioribus subtus densissime barbellato-setulosis distinctius plinervatis differt.

Ramuli primum rotundato-quadrangulati demum teretes sicut petioli laminarum subtus venae primariaeque dense pilis asperis ca. 0.3 mm longis strigulosi. Petioli 1.0-1.5 cm longi; lamina 7-12 X 2.0-4.5 cm oblongo-elliptica apice anguste acuto basi acuta, rigidiuscula et integra, supra rugulosa et sparse aculeata in superficie glabra, subtus densissime pilis dendriticis apice ca. 0.5 mm setuliferis obsita, 5-plinervata pari interiore 0.5-1.0 cm supra basim divergenti nervis secundariis 2-3 mm inter se distantibus nervulis subtus paullulo elevatis areolis ca. 1.5 mm latis. Panicula 8-11 cm longa multiflora floribus in ramulis interrupto-aggregatis; flores 5-meri haplostemoni essentialiter sessiles (pedicellis 0.2 mm longis),

bracteolis non visis. Hypanthium (ad torum) 2.3 mm longum densiuscule pilis conicis asperis ca. 0.2-0.3 mm longis setulosum; calycis tubus 0.2 mm longus, dentibus interioribus 0.4 mm longis dentes exteriores aequantibus vel paulo brevioribus. Petala 2.6-2.7 X 1.4-1.5 mm obovato-oblonga apice acuto subglabra. Stamina isomorphica glabra; filamenta ca. 2.1 mm longa; antherarum thecae 1.4-1.7 X 1 X 0.6 mm oblongae poro 0.4 mm diam. dorsaliter inclinato, connectivo non prolongato dorsaliter ad basim dente descendenti acuto 0.4-0.6 X 0.4 mm armato. Stigma paulo expansum 0.2 mm diam.; stylus 6 X 0.15-0.20 mm glaber; ovarium 3-loculare et ca. 3/5 inferum apice 5-alato; fructus capsularis lateraliter dehiscens.

The suggested Colombian relative has shortly plinerved (0.3-0.5 cm) leaf blades with length/width ratio 1.7-1.9 (rather than 2.3-3.0), broadly acute blunt apices, and obtuse to rounded-obtuse bases, with the lower surface visible between the hairs. No flowering material of *Alloneuron bullatum* Wurdack has yet been collected.

Huilaea ecuadorensis Wurdack, *sp. nov.* TYPE: *L.J. Dorr & I. Valdespino 6294*, collected in disturbed montane forest along Gualaceo-Limón Road 21.1 km SE and below highest pass, Prov. Morono-Santiago, ECUADOR, elev. 2215 m, 15 Jun 1989. "Tree 4 m tall. Flowers pendent. Petals fleshy, pinkish-red fading to white at margins. Flower buds bright red. Anthers white." (HOLOTYPE: NY!; Isotype: US!, 3 additional isotypes to be distributed).

H. mutisiana Uribe et *H. penduliflorae* Wurdack affinis, ramulorum foliorum subtus venarum primariorum pilis brevioribus foliis ad apicem late obtusis vel obtuso-rotundatis differt.

Ramuli obtuse tetragoni primum sicut foliorum subtus venae primariae pedunculi pedicellique dense pilis crassiusculis minute barbellatis plerumque ca. 0.1 mm longis induti demum glabrati; linea interpetiolaris ca. 0.1-0.2 mm elevata evoluta. Petioli 2-3 cm longi; lamina 10.0-14.5 X 7.5-9.5 cm late elliptica apice obtuso vel rotundato ca. 1 mm hebeti-mucronato basi late rotundato-obtusa, rigida et integra, ubique primum modice furfuracea supra mox glabrata subtus demum in venis secundariis venulisque sparse vel modice furfuracea in superficie mox glabrata, 7-nervata (jugo exteriori inframarginali incluso) nervis secundariis 2-3 mm inter se distantibus nervulis subtus crebre reticulatis (areolis ca. 0.3-0.4 mm latis) in venarum primariorum axillis subtus auriculis 2-6 X 1 mm (acarodomatibus?) armatis. Inflorescentiae e foliorum superiorem axillis singulae triflorae, pedunculo 4.5-7.0 cm longo arcuato;

flores 6-meri, pedicellis 1.5-2.2 cm longis et 0.5-0.8 cm infra hypanthium articulatis, bracteis (ca. 7-8 X 3 mm) et bracteolis (ca. 3-4 X 2 mm) mox deciduis. Hypanthium (ad torum) ca. 14 mm longum basaliter modice furfuraceum et verruculosum; calyx 6 mm longus paullulo (0.2 mm) 6-undulatus dentibus exterioribus crassis non vel vix eminentibus; torus intus minute glanduliferus. Petala 38-44 X 18-22 mm oblango-obovata apice rotundato-truncato glabra extus centraliter muriculata. Stamina isomorphica glabra; filamenta 16-18 mm longa; antherarum thecae 10 X 2.5 X 3.2 mm oblongae poris duobus 0.4 mm diam., connectivo non prolongato ca. 2 mm supra basim dorsaliter minute tuberculato. Stigma non expansum; stylus 45 X 1.0-1.2 mm glaber; ovarium inferum ca. 8 mm longum et 6-loculare apice conico truncato 1 mm alto glabro.

Both suggested Colombian relatives have young stems and primary leaf veins beneath setulose with roughened hairs 0.5-1.0 mm long, as well as acute to shortly acuminate leaf blade apices. *Huilaea mutisiana* Uribe has distinctly denticulate leaf blades and external calyx teeth projecting 1.5-2.0 mm, as well as larger hypanthia; *H. penduliflora* Wurdack has plinerved leaf blades tapering to the base and somewhat smaller flowers (petals ca. 32 X 11 mm, anthers ca. 8.5 mm long). I have seen no additional material of either relative since the original descriptions.

Leandra gorzulae Wurdack, *sp. nov.* TYPE: *Otto Huber 12792*, collected on the NE sector of Sierra de Migualida, headwaters of Río Chajura (west affluent of Río Erebató), Dto. Cedeño, Edo. Bolívar, VENEZUELA, 05° 33' N, 65° 13' W, elev. 2100 m, 28 Mar 1988. "Sufrutice de hasta 0.5 m, poco frecuente en herbazal y arbustal. Hojas fuertemente revolutas. Pedunculos, pedicelos, y cáliz rojo vino muy oscuro, corola reflexa rosada, estambres amarillos. Fruto de hasta 1 cm diámetro, negruzco cuando maduro." (HOLOTYPE: VEN!; Isotype: US!).

L. chimantensi Wurdack affinis, inflorescentiarum hypanthiorumque pilis omnibus eglandulosis floribus 5-meris differt.

Frutex 0.5-1.0 m; ramuli teretes sicut petioli inflorescentiaque dense pilis 0.5-0.7 mm longis barbellatis patentibus vel paulo recurvatis induti. Petioli 0.3-0.5 cm longi; lamina (2.5-)3.5-5.0(-6.5) X 1.5-2.5(-3.0) cm elliptica apice late acuto vel obtuso basi obtusa, coriacea et ciliata obscure serrulata marginibus interdum recurvatis, supra sparse setulosa pilis conicis 0.1-0.2(-0.3) mm longis, subtus in venis primariis modice setulosa (ad 0.5 mm) pilis asperis et in superficie sparse setulosa (pilis 0.1-0.2 mm longis), 5-nervata

nervis secundariis ca. 2 mm inter se distantibus nervulis laxè reticulatis (1.0-1.5 mm). Panicula 2.0-4.5 cm longa pauciflora; flores 5-meri ut videtur sessiles, bracteolis ca. 1 mm longis subulatis setulosus subpersistentibus. Hypanthium (ad torum) 2.3 mm longum modice setulosum pilis ca. 1 mm longis obscure barbellatis; calycis tubus 0.5 mm longus, lobis interioribus 0.3 mm altis oblatis, dentibus exterioribus setulosus ca. 1.1-1.2 mm eminentibus; torus intus glaber. Petala 2.5-2.6 X 1.0-1.1 mm lanceata glabra extus ad apicem vix carinata. Stamina isomorphica glabra; filamenta ca. 1.8 mm longa; antherarum thecae 1.6-1.7 X 0.5 mm oblongo-subulatae poro paulo ventraliter inclinato; connectivum exappendiculatum. Stigma non expansum; stylus 5 X 0.3-0.4 mm glaber; ovarium 3-loculare et $1\frac{1}{4}$ - $1\frac{1}{3}$ inferum glabrum.

Paratypes (both topotypical): *Huber & Izquierdo 12787* (US!, VEN!) and *12787a* (US!, VEN!).

Leandra chimantensis Wurdack has inflorescence and hypanthial pubescence in part gland tipped and flowers 4-merous, but similar roughened cauline and hypanthial hairs and glabrous 3 celled ovaries. The other 5-merous tepui species with 3 celled ovaries (*L. longisepala* Wurdack, *L. maguirei* Wurdack, *L. neblinensis* Wurdack) have smooth hairs and setulose ovary apices. At Otto Huber's request, the epithet honors Dr. Stefan Gorzula, herpetologist and fellow explorer of Sierra de Maigualida.

Blakea vallensis Wurdack, *sp. nov.* TYPE: *F.A. Silverstone-Sopkin, N. Paz, H. Eriksson, & J. Knudsen 3912*, collected in cloud forest on the eastern slope of the Cordillera Occidental 1 hour by jeep from El Cairo, Cerro del Inglés, Serranía de los Paraguas, Mun. El Cairo, Depto. del Valle, COLOMBIA, elev. 2430 m, 1 Apr 1988. "Arbol en cumbre del cerro; hojas coriáceas; cáliz verde claro; pétalos 6, blancos teñidas ligeramente de rosado; filamentos blancos; anteras blancas con puntas amarillas." (HOLOTYPE: CUV 13456!; Isotypes: CUV!, US!).

B. cuatrecasii Gleason affinis, pedunculis floribusque minoribus differt.

Ramuli primum obtuse quadrangulati demum teretes sicut folia bractaeque primum inconspicue amorpho-furfuracei mox glabrati; linea tenuis interpetiolaris ca. 0.2 mm elevata evoluta. Petioli 1.5-2.5 cm longi; lamina (7-)10-14 X (4-)5-7 cm elliptica apice rotundato basi obtusa, coriacea et integra, 5-nervata (pari tenui ca. 1 mm inframarginali incluso) nervis secundariis ca. 2(-3) mm inter se distantibus, subtus in nervorum primariorum axillis inconspicue punctatis glabris. Flores in ramulorum quoque nodo superiore 2-4; pedicelli 1.7-2.0 cm longi verrucosi; bractae oblatae obscure (0.05

mm) ciliolatae alioqui glabrae; bracteae exteriores 11 X 12-13 mm basaliter ca. 2 mm coalitae; bracteae interiores 10.5 X 18.0 mm liberae. Hypanthium (ad torum) 6 mm longum glabrum; calyx ca. 1.2 mm longus integer minute ciliolatus alioqui glaber. Petala 16 X 14-15 mm obovata (apice paulo retuso) minute (0.05-0.10 mm) ciliolata alioqui glabra. Filamenta 7 mm longa glabra; antherarum thecae 6 X 3 X 2.5 mm lateraliter cohaerentes minute biporosae, appendice dorso-basali ca. 1 mm longa hebeti. Stigma 0.3 mm diam. non expansum; stylus 9.6 X 1.0-0.3 mm glaber; ovarium 6-loculare et omnino inferum, cono apicali ca. 1.2 mm alto truncato glabro.

Paratypes (topotypical): *Silverstone-Sopkin, Paz, González, Cabrera, Garcés, & Henao* 2694 (CUVC!, US!), 2811 (CUVC!, US!).

Blakea cuatrecasii Gleason is rather similar qualitatively but has peduncles at anthesis 3-4 cm long, outer bracts 15-18 mm long, and petals (25-)30-35 mm long. *Blakea pyxidanthus* Triana has primary leaf vein axils beneath barbellate and flowers smaller (outer bracts ca. 7 mm long, petals ca. 14 mm long).

NEW TAXA OF *DEUTZIA* (HYDRANGEACEAE) FROM SICHUAN, CHINA

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ABSTRACT

Two new species named *Deutzia leiboensis* spec. nov. and *D. jinyangensis* spec. nov. and two new varieties named *D. pilosa* Rehd. var. *longiloba* var. nov. and *D. longifolia* Franch. var. *densitomentosa* var. nov. from Sichuan, China, are described.

KEY WORDS: *Deutzia*, Hydrangeaceae, new taxa, Sichuan, China

Deutzia leiboensis P. He & L.C. Hu, spec. nov. TYPE: CHINA. Sichuan austro-occid.: Leibo xian, Xilin, alt. 1200 m, May 1983, C.S. Zhao, et al. 117166 (HOLOTYPE: SZ). Paratype: Eodem loco, Fongzi-ai, alt. 1200 m, foliis flavo-virides, 4 Jul 1983, Herb. Univ. Sichuan. Exped. 110396 (SZ).

Species *D. fargesii* Franch. affinis sed foliis chartaceis, elliptico-ovatis vel oblongo-ovatis saepe 3-7 cm longis, 1-3 cm latis, subtus flavo-viridibus, papillis apice pilis 4-6 radiatis praeditis dense gerentibus; calycis lobis persistentibus patentibus differt.

Frutex 1-2 m altus; rami fusco-purpurei, sparse stellato-pilosi, cortice non delapso. Folia breviter petiolata; lamina chartacea, elliptico-ovata vel oblongo-ovata, 3-7(-10) cm longa, 1-3 cm lata, apice caudato-acuminata, basi late cuneata vel subrotundata margine minutissime denticulata, supra viridis, pilis stellatis 3-5 radiatis sparse conspersa, subtus flavo-viridis, papillis apice 4-6 radiatis praeditis gerens, nervis lateralibus utrinsecus 2-3; petioli 1.0-3.5 mm longi. Cyma 3.0-5.5 cm diam., 3-20-flora, pedunculis gracilibus, 2.0-2.5 cm longis, pilis 4-6 radiatis sparse pubescentibus; pedicelli 1-4 mm longi dense stellato-pilosi; calyx 2.8-3.2 mm longus, 1.0-2.2 mm latus, extus pilis 8-12 radiatis dense vistitus,

lobis deltoideis, ca. 0.8-1.1 mm longis, petala alba, oblonga, 4.0-6.5 mm longa, 1.2-2.0 mm lata, extus 8-10 radiato stellato puberula, intus glabra; stamina exteriora ca. 3-4 mm longa, filamentis late linearibus apice 2 dentatis, ea interiora spathulatis, ca. 3.0-3.5 mm longis, dentibus connatis, antheram juxta apicem affixam gerentia; styli 3, ca. 3 mm longi. Capsula subglobosa, 5 mm diam., calycis dentibus persistentibus patentibus.

This species is similar to *Deutzia fargesii* Franch., from which it differs in leaves chartaceous, elliptic-ovate or oblong-ovate, lower side of lamina yellowish green, covered with stellate hairs with a short stalk attached on the surface of lamina and therefore the hairs not keeping close to lamina surface.

Deutzia pilosa Rehd. var. *longiloba* P. He & L.C. Hu, var. nov. TYPE: CHINA. Sichuan occid.: Emei xian, Mt. Emei, May 1984, P. He 830083 (HOLOTYPE: SZ). Paratypes: Eodem loco, P. He 830084 (SZ); Eodem loco, G.H. Yiang 54556 (SZ); Eodem loco, G.H. Yiang 55510 (SZ).

A typo recedit foliis longioribus saepe ovato-oblongis, 5-10 cm longis, 2-4 cm latis, subtus flavo-viridibus, calycis lobis longioribus, triangulo-lanceolatis, 1.5-2.5 mm longis, stellato-pilis heteromorphis dense vestitis; filamentis exterioribus apice 2 obtusidentatis, dentibus antheram non superantibus vel subaequantibus, calyx dentis persistentibus patentibus.

The new variety differs from *Deutzia pilosa* Rehd. var. *pilosa* chiefly in lamina 5-10 cm long, 2-4 cm wide, lower side yellowish green, calyx teeth triangular-lanceolate, 1.5-2.5 mm long, outer filaments with two teeth not exceeding the anther and persisting calyx teeth straight, spreading.

Deutzia jinyangensis P. He & L.C. Hu, spec. nov. TYPE: CHINA. Sichuan austro-occid.: Jinyang Xian, Liangshan Chin. Medic. Exped. 170 (HOLOTYPE: SICM = Herbarium of Sichuan Institute of Chinese Medicine). Paratypes: Huidong Xian, Duge Xiang, alt. 2700 m, 21 Jul 1959, S.G. Wu 1139 (SZ); Huidong Xian, Duge Xiang, alt. 2700 m, 21 Jul 1959, S.G. Wu 1311 (SZ).

Species *D. purpurascens* (Franch.) Rehd. affinis, sed foliis chartaceis, subtus albidis, densissime stellato-puberuli. Cymis compactis, 1.5-2.5 cm diam., pedicellis brevioribus 1-4 mm longis, filamentis interioribus complete connatis, attenuati (nec foliis membranaceis, subtus viridis, sparse stellato-puberulis; cymis laxis, 2.5-4.5 cm diam., pedicellis 10-15 mm longis, filamentis interioribus obtusis, 2 dentatis vel irregular dentatis) differt.

Frutex 1-2 m altus; ramuli fertiles 2.5-5.5 cm longi, 2-4(-6) phylli, juveniores initio sparse stellato-pilosi, purpureo-brunnei, gemmae perulis late ovatis stellato-pilosi, 1.0-2.5 mm longis, 1.2-2.0 mm latis. Folia petiolata; lamina chartacea, subpersistens, ovata vel ovato-lanceolata, 2.5-5.0 cm longa et 1.5-2.5 cm lata, apice acuminata, basi subtruncata vel late cuneata, margine densissime denticulata, supra viridis, pilis 4-5(-6) radiatis sparse conspersa, subtus albida, pilis (6-)7-10 radiatis dense obiecta ad costam nervosque sine simpliciter puberula, nervis lateralibus utrinsecus 3-4; petioli 2-4 mm longi, pilis 8-11 radiatis obiecti. Cyma 1.5-2.5 cm diam., pedicelli 1.1-4.0 mm longi, calyx 6-7 mm longus extus densissime 8-12 radiato stellato puberulus, lobis lanceolatis, 3.0-3.5 mm longis; petala intus alba, glabra, extus rubra, anguste-obovata, 7-10 mm longa, 4.5-6.0 mm lata, 8-10 radiatis stellato puberula; stamina exteriora ca. 5.0-6.5 mm longa, filamentis linearibus, dentibus complete connatis, apice attentis antheram juxta apicem affixam brevissime stipitatam gerentia; styli 3-4, ca. 5-6 mm longi. Capsula hemispherica, 3.0-4.5 mm diam.

The new species resembles *Deutzia purpurascens* (Franch.) Rehd., from which it can be easily distinguished by leaves chartaceous, lower side albinotic, more densely covered with stellate hairs; cyme more dense, 1.5-2.5 cm in diam., pedicels only 1-4 mm long; inner filaments completely connate, attenuate (not leaves membranous, lower side green, sparsely covered with stellate hairs; cyme lax, 2.5-4.5 cm in diam., pedicels 10-15 mm long and inner filaments obtuse, with 2 teeth or irregular teeth at apex as in *D. purpurascens*).

Deutzia longifolia Franch. var. *densitomentosa* P. He & L.C. Hu, var. nov. TYPE: CHINA. Sichuan austro-occid.: Leibo Xian, 257 Linquan-zhan, alt. 2170 m, 13 Jul 1983, C.S. Zhao & Z.J. Zhao 119719 (HOLOTYPE: SZ). Paratypes: Eodem loco, Lulin-qu, C.S. Zhao & Z.J. Zhao 121299 (SZ); Eodem loco, Shanlen-gan, C.S. Zhao & M.Y. He 12209 (SZ); Eodem loco, Shanlen-gan, C.S. Zhao & M.Y. He 122698 (SZ).

A *D. longifolia* Franch. typica differt plerumque foliis supra dense 6-11 radiati stellato-pilosis pilis adpressis conspersis, subtus densissime 12-17(-18) radiatis stellato-puberulis (nec supra sparse 5-6 radiatis, subtus 8-14 radiatis radio centrali instructis).

The variety can be easily distinguished from *Deutzia longifolia* Franch. var. *longifolia* by upper side of leaves more densely covered with 6-11 rayed appressed stellate hairs, lower side covered with 12-17(-18) rayed appressed stellate hairs without central ray (not upper side of leaves sparsely covered

with 5-6 rayed stellate hairs, lower side covered with 8-14 rayed stellate hairs with central ray as in *D. longifolia* var. *longifolia*).

ACKNOWLEDGMENTS

The field work and herbarium visits of the first author were partly supported by grants from the *Flora Sichuanica* foundation and the authors wish to thank Prof. Dr. Z. He and Prof. Dr. J.H. Xiong of Southwest China Agriculture University of China for reviewing the manuscript.

TAXONOMY OF *DEUTZIA* (HYDRANGEACEAE) FROM SICHUAN, CHINA

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ABSTRACT

The present paper deals with a taxonomic study of the genus *Deutzia* Thunb. of Sichuan, China. Eighteen species, and an additional seven varieties are reported. A discussion of economic value, distribution, and a systematic key to species of *Deutzia* are provided. The delimitation and rank of some doubtful taxa, such as *D. corymbiflora* Lem. ex André, *D. vilmorinae* Lem. & Bois, and *D. longifolia* Franch. var. *sikangensis* (Fang) P. He are reinvestigated and ascertained.

KEY WORDS: *Deutzia*, Hydrangeaceae, taxonomy, Sichuan, China

I. Taxonomic history and economic value

Deutzia Thunb. was established by C.P. Thunberg (1781) with the type species *Deutzia scabra* Thunb. of Japan. The genus was named after his good friend, Dutch botanist J. von der Deutz. Afterwards, many western botanists, such as R. Franchet (1885), A. Engler (1891; 1930), C.K. Schneider (1904) and A. Rehder (1911; 1912), have contributed more or less towards a classification of the genus. However, the classification put forward by them was far from satisfactory until the publication of a monograph of *Deutzia* by the Russian botanist T.I. Zaikonnikova (1966). Chinese taxonomists involved with the taxonomy of *Deutzia*, W.C. Cheng (1935), W.P. Fang (1955) and W.T. Wang (1983) have reported five new species of *Deutzia* in China, but no comprehensive systematic work was done on the genus by Chinese scholars. Since the modern distributional center of *Deutzia* is in southwest China (Sichuan and Yunnan), and more and more collections of *Deutzia* reveal limitations of Zaikonnikova's monograph, an overall classification of *Deutzia* in Sichuan seems to be necessary. The author has been engaged in the Saxifragaceae

project for *Flora Sichuanica* and at least 2000 specimens of *Deutzia* kept in all herbaria in Sichuan and some of Yunnan have been painstakingly checked and determined since 1983. Hence, the taxonomic outline presented here is a summary of work on *Deutzia* in Sichuan, China. Descriptions and typifications of recent names occurring in the key are found in papers by P. He (1990) and P. He & L.C. Hu (1990).

The main economic value of *Deutzia* lies in its horticultural use as early spring flowering plants in the North Temperate Zone. Though C.P. Thunberg established the genus as early as 1781, *Deutzia* had not been noticed and introduced into Europe until 1822. It became attractive to Europeans at the end of the last century because many species were introduced into Europe from China, especially from southwest China (Sichuan, Guizhou, and Yunnan) and central China (Hubei), areas rich in *Deutzia* species. Many hybrids with colorful flowers were produced by Victor Lemoine in his famous greenhouse. Recently, disagreements about the horticultural uses of *Deutzia* arose because it lacks colorful flowers and fruits. But *Deutzia* is still attractive to gardeners because of its ease of hybridization and cultivation. In Sichuan, the most popular early spring flowering horticultural *Deutzia* taxon is *D. scabra* Thunb. f. *plena* (Maxim.) C.K. Schn., a white flowered form which can be seen easily in many cities of Sichuan. Another popular one is *D. corymbiflora* Lem. ex André which is widely planted in eastern Sichuan.

Little attention has been paid to the medical uses of *Deutzia*. Only three species from China have been noted to have medical uses. *Deutzia glomeruliflora* Franch. (called mountain jasmine in western Sichuan) and *D. schneideriana* Rehd. (in eastern Sichuan and Hubei) are used to cure enuresis. *Deutzia ningponensis* Rehd. (in Zhejiang) is used to cure enuresis, malaria, scabies, and fracture.

II. Geographical distribution

In the world, there are about 60 species of *Deutzia*. These are grouped into three sections, namely, sect. *Neodeutzia* Engl., sect. *Mesodeutzia* C.K. Schn., and sect. *Deutzia*. About 50 species occur in China, of which ca. 18 species have been known in Sichuan. The distribution of *Deutzia* falls into the Asia-North America disjunction distribution pattern. The majority of species are in sect. *Deutzia* and sect. *Mesodeutzia*, which are restricted to Asia (rarely to eastern Europe) ranging from mainland China to Pakistan, Nepal, India, Bhutan, Japan, Korea, The Philippines, and Soviet Union. A small number of *Deutzia* (sect. *Neodeutzia*) are found in North America (México).

In China, *Deutzia* has been recorded in all the provinces and autonomous regions except Xinjiang. The distributional center is Sichuan and Yunnan,

from which it extends westward to Xizhang (Tibet), eastward to coastal regions of east and southeast China, and northward to Gansu, Shaanxi and north China, some species extend to northeast China.

In Sichuan, *Deutzia* is widely distributed from Wushan, Wuxi in the east, to Baoping (Muping) and Xiangcheng in the west, and from Huidong, Pangzhihua in the south, to Nanping and Songpan in the north (ca. 26° 20' - 32° 45' N and 98° 50' - 109° 48' E is its main distributional area in Sichuan).

The distribution of sect. *Deutzia* in Sichuan shows a interesting tendency: subsect. *Cymosae* Rehd. has a more easterly distribution, and its elevational distribution tends toward low mountain valleys and moist forest habitats (from alt. 400-1800 m), while subsect. *Stenosepalae* C.K. Schn. has a more westerly distribution, and prefers high mountain cold and dry habitats (from alt. 1800-3500 m). This phenomenon may be mainly due to the special topography of Sichuan and the influence of different ecological factors. The eastern Sichuan basin is humid in summer and warm in winter (temperature in winter is 3-8° C higher than in middle and lower parts of the Yangzhi River). The low terrain of eastern Sichuan, and the northern protective screen of Mt. Qingling and Mt. Daba which can prevent invasion of cold weather from the north, are the probable causes for the higher temperatures in that part of the province. Roughly the same situation occurs in Xichang and the Anling River areas of western Sichuan, where there are many valleys with low elevation and warmer and more humid habitats. *Deutzia* in those areas are mainly the following species, namely, *D. multiradiata* W.T. Wang, *D. nitidula* W.T. Wang, *D. bodinieri* Rehd., *D. fargesii* Franch., *D. leiboensis* P. He & L.C. Hu, *D. pilosa* Rehd., *D. setchuenensis*, and *D. corymbiflora*, which belong to subsect. *Cymosae* Rehd. While in most parts of western Sichuan the climate is more complicated because rugged and high terrain make the habitats here colder and more arid. The plants here are mainly those of subsect. *Stenosepalae* C.K. Schn., including *D. rehderiana* C.K. Schn., *D. discolor* Hemsley, *D. jinyangensis* P. He & L.C. Hu, *D. longifolia* Franch., and *D. glomeruliflora*. From a morphological point of view, *Deutzia* species show very interesting adaptations to different habitats. The majority of *Deutzia* have stellate hairs covering lower and upper sides of leaves. The number of rays and density of stellate hairs vary greatly among species. Those of subsect. *Cymosae* live in warmer and more humid habitats, and therefore are rather sparsely covered with stellate hairs not touching each other and having few (5-8) rays (except *D. multiradiata* and *D. nitidula*), while those of subsect. *Stenosepalae* occupy colder and more arid habitats and are densely to very densely covered with many (10-18) rayed stellate hairs. The dense covering of hairs can slow transpiration and heat dissipation. Furthermore, the inflorescence of subsect. *Cymosae* has an elongate peduncle to hold the flowers high in order to gain more sunlight in low mountain habitats with dense mist, while that of subsect. *Stenosepalae* has no peduncle or has a much shortened one, usually with two leaves surrounding the dense, corymb-

like cyme so that the reproductive organs can be protected from the intrusion of fierce cold weather and strong wind in high mountains. This trait of the inflorescence is seen especially in *D. longifolia* and *D. glomeruliflora*, and their varieties living above 3000 m. A further study on the adaptative meaning of stellate hairs of *Deutzia* is certainly needed.

It is noteworthy that *Deutzia coriacea* Rehd. is a striking species from eastern Sichuan and should have been included in this paper. However, no collection from China is available and three trips by the author to the type locality have failed to find the species. Therefore, it is excluded from the paper until further collections and a detailed study can be made.

III. Key to the species

1. Petals imbricate in flower buds, broadly obovate to subcircular; calyx teeth broadly triangular-ovate to broadly ovate, much shorter than calyx tube
I. Sect. *Mesodeutzia* C.K. Schn. (1). Ser. *Rubentes* Zaikonn. 2
- 1' Petals valvate in flower buds, oblong-elliptic or obovate (II. Sect. *Deutzia* 4
 2. Lower side of leaves glaucescent, glabrous or rarely very sparsely covered with 4-6 rayed stellate hairs
..... 1a. *D. hypoglauca* var. *hypoglauca*
 - 2' Lower side of leaves not glaucescent but with 3-6(-7) rayed stellate hairs 3
3. Upper side of leaves sparingly covered with 3 rayed stellate hairs, lower side densely covered with 3-5 rayed stellate hairs; flowers white
..... 1b. *D. hypoglauca* var. *shawana* (Zaikonn.) Zaikonn.
- 3' Upper side of leaves covered with 4-5 rayed stellate hairs, lower side covered with 4-7 rayed stellate hairs; flowers pink 2. *D. rubens* Rehd.
4. Calyx teeth triangular to deltate, much shorter than calyx tube . 5
- 4' Calyx teeth narrowly triangular to lanceolate, as long as calyx tube to slightly longer than calyx tube; cyme subsessile, petals obovate
3. Subsect. *Stenosepalae* C.K. Schn. (4). Ser. *Discolores* Zaikonn. 15
5. Inflorescence a panicle, subsessile; filaments narrowly oblong with teeth at apex or without teeth, the teeth (if present) usually not exceeding the anther 1. Subsect. *Deutzia* 3. *D. schneideriana* Rehd.

- 5' Inflorescence a corymblike cyme with longer peduncle (rarely subsessile); teeth at apex of inner filaments usually exceeding the anther 2. Subsect. *Cymosae* Rehd. 6
6. Upper side of leaves greenish, lower side albinotic or grayish green, rather densely covered with 10-18 rayed stellate hairs; peduncle more than 3 cm long (2). Ser. *Multiradiatae* P. He 7
- 6' Upper and lower sides of leaves greenish, sparsely to very sparsely covered with fewer rayed (those on lower side usually 4-8 rayed) stellate hairs; peduncle only 1-2 cm long (3). Ser. *Pauciradiatae* P. He 8
7. Lamina strongly coriaceous, lower side albinotic, stellate hairs 12-18 rayed 4. *D. multiradiata* W.T. Wang
- 7' Lamina slightly coriaceous, lower side grayish green, stellate hairs 10-12 rayed 5. *D. nitidula* W.T. Wang
8. Lamina hard chartaceous to coriaceous 9
- 8' Lamina membranous to slightly chartaceous 10
9. Lower side of leaves covered with 7-8 rayed stellate hairs; styles usually 3; cyme with 5-20 flowers 6. *D. fargesii* Franch.
- 9' Lower side of leaves covered with 5-6 rayed stellate hairs; styles usually 4; cyme with 3-6 flowers 7. *D. bodinieri* Rehd.
10. Young twigs, peduncles and pedicels with stellate hairs, simple hairs lacking 11
- 10' Young twigs, peduncles and pedicels with stellate hairs and also with brown, spreading simple hairs 14
11. Lower side of leaves covered with unstalked stellate hairs with rays appressed to leaf surface 12
- 11' Lower side of leaves covered with stellate hairs with a short stalk, rays not appressed to leaf surface 10. *D. leiboensis* P. He & L.C. Hu
12. Base of lamina obtuse to rounded; cyme composed of fewer than 15 flowers 13
- 12' Base of lamina cordate (-rounded); cyme composed of more than 30 flowers 9. *D. corymbiflora* Lem. ex André
13. Stellate hairs on lower side of leaves usually without central rays; outer filaments with 2 shorter teeth at apex, these not exceeding the anther 8a. *D. setchuenensis* var. *setchuenensis*

- 13' Stellate hairs on lower side of leaves usually with central rays; outer filaments with 2 longer teeth at apex, these exceeding the anther 8b. *D. setchuenensis* var. *longidentata* Rehd.
14. Leaves dark green; outer surface of calyx tube covered with appressed stellate hairs without central ray; calyx teeth deltate, 0.8-1.2 mm long; outer filaments with 2 sicklelike teeth, far exceeding the anther; persisting calyx teeth incurved 11a. *D. pilosa* Rehd. var. *pilosa*
- 14' Leaves yellowish green; stellate hairs on outer surface of calyx tube with or without central ray; calyx teeth narrowly triangular to triangular, 1.5-2.5 mm long; outer filaments with 2 teeth, not exceeding the anther; persisting calyx teeth straight, spreading 11b. *D. pilosa* Rehd. var. *longiloba* P. He & L.C. Hu
15. Young twigs papillose, fertile branches much shortened; cyme bearing 2-5 flowers; lamina 1.8-2.5 cm long, 0.6-1.2 cm wide, lower side covered with 6-8(-9) rayed stellate hairs 2. *D. rehderiana* C.K. Schn.
- 15' Young twigs not papillose 16
16. Anther with a 1.0-2.5 mm long stalk 17
- 16' Anther with a stalk shorter than 1 mm 19
17. Lower side of leaves rather densely covered with stellate hairs, hairs touching one another; inner filaments with 2-3 teeth at apex 18
- 17' Lower side of leaves sparsely to densely covered with stellate hairs, hairs not touching one another; inner filaments connate to 1 tooth at apex 15. *D. nanchuanensis* W.T. Wang
18. Lower side of leaves albinotic or albescent; cyme dense, pedicels 3-6 mm long; anthers of inner filaments attached between 2 teeth at apex 13. *D. discolor* Hemsl.
- 18' Lower side of leaves grayish green; cyme lax, pedicels 10-15 mm long; anthers of inner filaments attached to the middle part of the inner surface of the filaments 14. *D. vilmorinae* Lem. & Bois
19. Flowers red to purple 20
- 19' Flowers white 23
20. Lamina 4.5-8.0(-10) cm long, 1.0-2.5(-3.0) cm wide, lower side albescent 21

- 20' Lamina 2.0-3.0(-4.5) cm long. 0.6-1.2 cm wide, lower side grayish green, covered with 6-8 rayed stellate hairs
 7c. *D. longifolia* Franch. var. *sikangensis* (Fang) P. He
21. Lamina ovate to ovate-lanceolate, lower side sparsely covered with (6-)7-10 rayed stellate hairs, hairs not touching each other; pedicels shorter than 4 mm 16. *D. jinyangensis* P. He & L.C. Hu
- 21' Lamina lanceolate, lower side rather densely covered with 8-18 rayed stellate hairs, hairs touching each other; pedicels longer than 4 mm .22
22. Upper side of leaves sparsely covered with 5-6(-7) rayed stellate hairs, the hairs usually with central ray, lower side covered with 8-14 rayed stellate hairs, central ray present or absent
 17a. *D. longifolia* Franch. var. *longifolia*
- 22' Upper side of leaves densely covered with 6-11 rayed appressed stellate hairs, lower side covered with 13-18 rayed appressed stellate hairs without central ray
 17b. *D. longifolia* Franch. var. *densitomentosa* P. He & L.C. Hu
23. Lower side of leaves grayish green, sparsely covered with 4-6(-7) rayed stellate hairs, hairs not touching one another; outer filaments wide, petaloid 18a. *D. glomeruliflora* Franch. var. *glomeruliflora*
- 23' Lower side of leaves albescent, densely to rather densely covered with (7-)8-12(-13) rayed stellate hairs, hairs touching one another; outer filaments narrow 24
24. Lower side of leaves covered with 7-10 rayed stellate hairs, central ray present 18b. *D. glomeruliflora* Franch.
 var. *zerophyta* (Hand.-Mazz.) Zaikonn.
- 24' Lower side of leaves covered with 8-13 rayed adpressed stellate hairs, central ray lacking
 18c. *D. glomeruliflora* Franch. var. *forrestiana* Zaikonn.

ACKNOWLEDGMENTS

The field work and herbarium visits were partly supported by grants from the *Flora Sichuanica* foundation and the author wishes to thank Prof. Dr. L.C. Hu, Biology Department of Sichuan University, for her unfailing encouragement and guidance to the author over the past three years. Thanks are due to Prof. Dr. Z. He and Prof. Dr. J.H. Xiong of Southwest China Agriculture University for comments on the paper.

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AGERATINA HENZIUM (ASTERACEAE: EUPATORIEAE), A NEW SPECIES
FROM NORTHWESTERN MÉXICO

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ABSTRACT

A new species, *Ageratina henzi* *sp. nov.*, from Sinaloa and closely adjacent Durango, México is described and illustrated. It is related to the widespread *A. adenophora* (Spreng.) King & H. Robins. but is readily distinguished by its puberulent stems, nearly glabrous foliage, and peduncles with minute capitate glandular hairs that are not at all viscid.

KEY WORDS: *Ageratina*, Asteraceae, Eupatorieae, México

Preparation of a treatment of the difficult genus *Ageratina* for the Asteraceae of México has revealed the following novelty.

Ageratina henzi B. Turner, *sp. nov.*, (Figure 1). TYPE: MÉXICO. Durango: Km 1180 on the Cd. Durango-Mazatlán Highway 40, 2000 m, May 1970 Dr. & Mrs. H.R. Henze *s.n.* (HOLOTYPE: TEX!).

Ageratinae adenophorae (Spreng.) King & H. Robins. similis sed caulibus rubentibus tantum puberulis et pedunculis trichomatibus minutis glandulosi-capitatis (vs. trichomatibus elongatis glandulosi-viscidis) differt.

Suffruticose perennial herbs or shrublets to 1 m high. Stems minutely puberulent and reddish at first, but glabrate and brownish with age. Leaves 6-15 cm long, 2-7 cm wide; petioles mostly 3-6 cm long; blades deltoid to subcordate, glabrous or nearly so, except along the major veins which are minutely puberuloglandular, the margins irregularly serrate, often sharply so. Heads numerous in congested corymbs, the ultimate peduncles mostly 1-5 mm long, beset with few to numerous very short capitate glandular hairs, these often interspersed among incurved puberulous hairs. Involucres subturbinate,

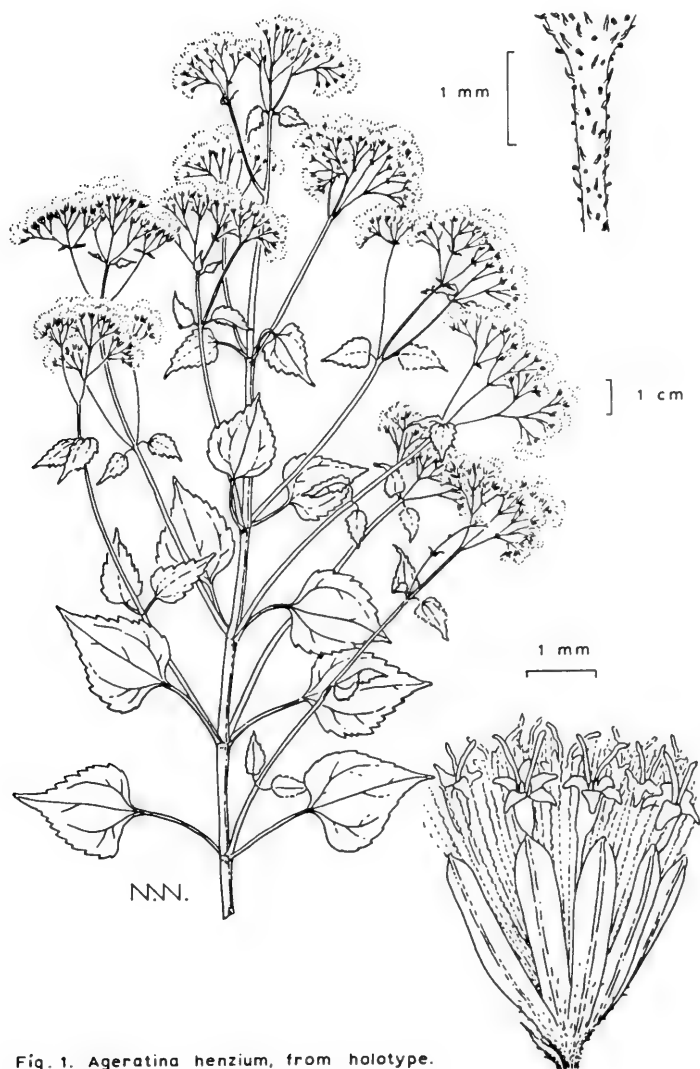


Fig. 1. *Ageratina henizium*, from holotype.

3-4 mm high, the bracts relatively few (8-11), 0.7-1.0 mm wide, the apices obtuse to rounded, scarious and often rosy colored. Disk florets 22-30 per head, the corollas ca. 3 mm long, the tube ca. 1.5 mm long, the limb abruptly ampliate, ca. 1.5 mm long. Achenes fusiform, ca. 1.5 mm long, sparsely ciliate, especially along the angles, the pappus of ca. 30 rosy bristles, these exceedingly fragile, readily deciduous, ca. 3 mm long.

Additional specimens examined: MÉXICO. Sinaloa: Rancho Libre Barranca, 2 air miles NW of El Palmito, N of highway 40 and very near the Durango State line (ca. 105° 51' W, 23° 36' N). "Cloud forest on steep north-facing slopes and humid pine forest on more exposed ridges.", 2250 m, 27 Mar 1984, *A.C. Sanders 4915* (TEX, UCR); along highway 40 between La Guayana and El Cantil, ca. 21 mi NE of Concordia (ca. 10° 50' W, 23° 24' N), rocky oak-covered slopes cut by small canyons with tropical broad-leafed forest, 950 m, 28 Mar 1984, *Sanders 4973* (TEX, UCR).

Sanders (4915) notes the species to be a "Fairly common 2-1/2 ft. subshrub" with flowers white and the unopened buds red.

Ageratina henzi is readily distinguished from those taxa that occur in northwestern México by its rosy colored subturbinate involucre which possess only 8-11 bracts and relatively few florets (20-30). It belongs to the subgenus *Ageratina* and is perhaps most closely related to *A. adenophora* (Spreng.) King & H. Robins., from which it is readily distinguished by its merely puberulent stems, nearly glabrous foliage, nonviscid peduncles, and smaller rosy heads.

It is a pleasure to name this species for its first collectors, Dr. and Mrs. H.R. Henze. The late Doctor Henze was a Professor of Chemistry at the University of Texas, Austin; his widow, Mrs. Henrietta Henze, currently lives in Austin and is an active supporter of the program in botany at the University of Texas.

ACKNOWLEDGMENTS

I am grateful to Guy Nesom for the Latin diagnosis and to him and Andrew McDonald for reviewing the manuscript.

ON THE LECTOTYPIFICATION OF *EVONYMUS ATROPURPUREUS*
JACQ. (CELASTRACEAE)

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ABSTRACT

A Jacquin specimen at BM is hereby designated the lectotype of *Evonymus atropurpureus* Jacq.; it is the sheet from which the published figure was drawn.

KEY WORDS: *Evonymus*, Celastraceae, North America, woody plants

A specimen which is original material of *Evonymus atropurpureus* Jacq. (the spelling of *Evonymus*, not *Euonymus*, has been a never ending source of debate which only recently has been resolved by the wording of Art. 13.4 of the present International Code of Botanical Nomenclature [Greuter, *et al.* 1988]) has been located in the herbarium at The Natural History Museum in London (BM). A close comparison of the Jacquin sheet with his published illustration of *E. atropurpureus* revealed the specimen to be nearly identical, so much so that the specimen was clearly the element from which the drawing had been made. Apparently of garden origin, the sheet probably came from one of the botanical gardens in Vienna with which Jacquin was associated (D'Arcy 1970). Given the difficulties with the typification of Jacquin names, as discussed by D'Arcy, to find an element so clearly unequivocal was surprising. Accordingly, the following lectotypification is proposed.

Evonymus atropurpureus Jacq., *Hort. Bot. Vindob.* 2:55, pl. 120. 1772-1773.

LECTOTYPE (selected here): garden specimen, *Jacquin s.n.* (BM).

The lectotype was discovered in the course of a search for John Clayton specimens at BM which were used by Carl Linnaeus to describe temperate North American vascular plants. One, *Clayton 810* (BM!), proved to be a collection of *Evonymus atropurpureus* Jacq. (Celastraceae). Prior to his

death, Gronovius sent to Jacquin a series of fragments from the Clayton collections then in his possession. Later, Sir Joseph Banks acquired not only the Gronovius herbarium, but that of Jacquin as well, thereby reuniting the once dispersed Clayton specimens. Usually, a Jacquin fragment of a temperate North American plant proves to be a Clayton specimen, but in this instance, that was not the case.

One of the nomenclatural tragedies associated with early temperate North American botany is that Gronovius (1762) failed to apply Linnaean binomials in the second edition of his *Flora Virginica*, thereby rendering his (and Clayton's) many new species historical curiosities. One such species is *Evonymus atropurpureus*. Clayton's plant was given a polynomial, *Evonymus foliis lanceolato-oblongis serratis petiolatis, capsula quadriloculari*, by Gronovius (p. 33), but without a corresponding binomial, the name is invalid. Thus, another species Clayton knew well to be undescribed remained unnamed for another decade.

According to Aiton (1789), *Evonymus atropurpureus* was introduced into England in 1756, but there is no record as to the source of the seeds. There is a single, undated garden specimen at BM that probably was gathered in the late 1700s, and an unattributed North American specimen (BM) that outwardly appears to be a John Bartram collection, but it, too, is undated. As both Bartram and Clayton were sending seeds to various gardeners in England at this time, the source of the garden material ultimately gathered by Jacquin in Vienna could have been from either man.

ACKNOWLEDGMENTS

The manuscript was reviewed by Dr. Fred R. Barrie and Dr. Norlyn L. Bodkin. The study of early temperate North American types of vascular plants in Europe is supported by National Science Foundation Grant BSR-8812816. This is Scientific Article A-6103, Contribution No. 8268, of the Maryland Agricultural Experiment Station.

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THE REDISCOVERY OF *CAREX LUPULIFORMIS*, SECTION *LUPULINAE* (CYPERACEAE) IN TEXAS

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ABSTRACT

Carex lupuliformis Sartwell (section *Lupulinae* [Cyperaceae]), unreported in Texas for the past 28 years with only two reports for the state, has been found in Houston County.

KEY WORDS: *Carex*, *Carex lupuliformis*, Cyperaceae, *Lupulinae*, Texas

Carex lupuliformis Sartwell is found infrequently throughout its range, however, it can be locally abundant. The most southwesterly extension of its range is eastern Oklahoma and northeastern Texas. In Texas, the last collection record was 28 years ago by D. Correll (*Correll 26409* [TEX]) in Marion County, July 1962. Fourteen years before, it was collected by E. Whitehouse (*Whitehouse 20450* [SMU]) in Bowie County, 28 Sept 1948 (Jones & Hatch 1990). *Carex lupuliformis* was recently collected in Houston County: 29 Sept 1990, S. & G. Jones 5825 & J.K. Wipff (ASTC, HPC, MICH, MO, NLU, NY, PAUH, SAT, SHST, SRSC, SWT, SMU, TAES, TEX, UTEP, WARM, US), and J.K. Wipff 1785 & S. & G. Jones (jkw, J.K. Wipff's personal herbarium). This not only establishes this species as being extant in Texas, but also extends the Texas range southward and somewhat westward. The population contains over two hundred individual plants confined to an area about 30 x 10 meters. Specimens were collected in a bottomland hardwood swale which is subject to intermittent periods of standing water. The collection site is in the Davy Crockett National Forest, 0.9 mi N on FM 227 from its jct. with TX 7 in Ratcliff, 3.1 mi NE on Forest Service Road (FS) 547, then northward 1.8 miles on Big Slough Wilderness Road, then 2.8 miles E on FS 517, 100-200 meters N of FS 517. The soils are of the Sawyer Series, having a surface (A) horizon

that is fine sandy loam to loamy sand, grayish to pale brown in color, and is acid. The geology of the site is of the Alluvium (Qal) formation (Recent). Associated species include *Carex jooorii* Bailey, *Juncus repens* Michx., *Panicum rigidulum* Nees, *Erianthus strictus* Baldwin, *Liquidambar styraciflua* L., *Quercus nigra* L., *Q. lyrata* Walt., *Planera aquatica* (Walt.) G.F. Gmel., *Suarurus cernuus* L., and *Sabal minor* (Jacq.) Pers. Jones & Hatch (1990) have a key which can separate this species from other members of section *Lupulinae*.

We hope the rediscovery of this species in Texas will prompt the Texas Organization for Endangered Species to study this species as a candidate for the "state endangered species list" as defined by Beaty & Mahler (1987).

ACKNOWLEDGMENTS

We thank David Castaner (WARM) and Charles Bryson (USDA-Southern Weed Science Laboratory) for helpful suggestions concerning this manuscript.

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***LAENNECIA MAPIMIANA* (ASTERACEAE: ASTEREEAE), A NEW
SPECIES FROM NORTHWESTERN MÉXICO**

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ABSTRACT

A new species of *Laennecia*, *L. mapimiana*, is described from southeastern Chihuahua and adjacent Durango, México, in the region known as the Bolson de Mapimi. It is most closely similar and related to *L. coulteri* (A. Gray) Nesom and *L. sophiifolia* (Kunth) Nesom.

KEY WORDS: *Laennecia*, Asteraceae, Astereae, México

During the course of a recent study of the genus *Laennecia* (Nesom 1990), I reluctantly regarded a collection of unusual plants (four plants on one sheet) from southeastern Chihuahua, México, as depauperate individuals of *L. coulteri* (A. Gray) Nesom. The discovery of a nearly identical plant, however, collected by Josiah Gregg more than 100 years earlier from a nearby locality in adjacent Durango has convinced me that these plants represent a different and previously undescribed species.

***Laennecia mapimiana* Nesom, *sp. nov.* TYPE: MÉXICO. Chihuahua: 29.5 km N of the Camargo-Jiménez hwy on road to La Perla, 8 km S of Restaurante El Herradero, 27° 48' 30" N, 104° 50' W, 1275 m, alluvial bajada, fine-textured alluvium, mezquital and tobosa flat with *Prosopis glandulosa*, *Atriplex*, *Hilaria mutica*, 2 Apr 1973, M.C. Johnston, T.L. Wendt, & F. Chiang C. 10538-unicate (HOLOTYPE: TEX!).**

Laenneciae coulteri (A. Gray) Nesom similis sed caulibus minoribus decumbenti-ascendentibusque, corollis disci brevioribus, et acheniis prominenter strigosis differt.

Annual herbs from a slender taproot. Stems numerous, arising from the base, decumbent-ascending, 7-10 cm long; stems and leaves stipitate glandular, also coarsely and relatively sparsely hispid-pilose with spreading, thick based, jointed hairs 0.2-0.8 mm long, not at all woolly. Leaves pinnatifid with (3-)4-7

pairs of linear lobes, sometimes slightly bipinnatifid, subclasping, oblong in outline, 1-2 cm long, 2-5 mm wide, unreduced in size upwards until immediately below the heads. Heads 5-7 mm wide, in loose but definite corymbs; phyllaries in 3-4 subequal series, sometimes basally fused into a ring of tissue, the outer with a green central portion, without an orange resinous midvein, the inner 3.0-3.5 mm long, with long attenuate, hyaline, purplish apices. Pistillate corollas numerous, eligulate. Hermaphroditic (disc) corollas tubular, 1.8-2.2 mm long, with erect, purplish, lobes 0.1-0.3 mm long. Achenes elliptic-oblong, 0.9-1.0 mm long, thinly but prominently strigose, not evidently glandular; pappus uniseriate, of 9-12 fragile, basally caducous bristles.

Additional collection examined: MÉXICO. Durango: Bolson de Mapimi, 15 Apr 1847, *J. Gregg s.n.* (MO, annotated in pencil by Asa Gray as *Conyza coronopifolia* [Kunth]).

The new species is similar to *Laennecia coulteri* and *L. sophiifolia* (Kunth) Nesom in its glandular, coarsely pubescent herbage, small achenes, and uniseriate pappus of relatively few bristles. The deeply lobed, sometimes slightly bipinnatifid leaves of *L. mapimiana* are more similar to those of *L. sophiifolia* but like *L. coulteri* in their subclasping bases. The heads of *L. mapimiana* are much smaller than those of *L. sophiifolia*. Both of the previously described species differ from *L. mapimiana* in their erect, much taller stems and both produce columnar to pyramidal capitulescences with more numerous heads, shorter disc corollas, and prominently glandular but otherwise glabrate achenes.

In contrast to the April flowering of *Laennecia mapimiana*, almost all of the specimens of both *L. coulteri* and *L. sophiifolia* have been collected from June through November. Even the few earlier flowering ones (April and May) in *L. coulteri*, however, are identical to the later flowering ones in their robust stature and basally erect stems. *Laennecia coulteri* is completely overlapping in geographic range with the new species, but *L. sophiifolia* in México is allopatric, being primarily restricted to more montane areas. The following couplet provides details of the differences between *L. mapimiana* and *L. coulteri*.

1. Stems numerous from the base, decumbent-ascending, 7-10 cm long; leaves 1-2 cm long; heads in a loose but distinct corymb; disc corollas 1.8-2.2 mm long, the lobes 0.1-0.3 mm long, erect; achenes prominently strigose, not evidently glandular *L. mapimiana*
- 1' Stems 1-few from the base, erect, 30-110 cm long; leaves 1.5-3.0 cm long; heads in a spikelike panicle, sometimes apically widened and nearly corymboid; disc corollas 2.3-3.0 mm long, the lobes 0.5-0.9 mm long, spreading to erect; achenes very sparsely strigose, with minute but prominent papillate glands *L. coulteri*

ACKNOWLEDGMENTS

I thank Dr. B.L. Turner and Dr. P.O. Karis for their comments and review of the manuscript and the staff of MO for a loan of specimens.

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ERIGERON QUIEXOBRENSIS (ASTERACEAE: ASTEREAE), A NEW
SPECIES FROM OAXACA, MÉXICO

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ABSTRACT

A new member of *Erigeron* sect. *Imbarba* is described from Cerro Quiexobra in southcentral Oaxaca, *E. quiexobrensis* spec. nov. The new species apparently is most closely related to *E. galeottii* (A. Gray ex Hemsl.) E. Greene but is distinguished by its completely prostrate stems, rooting at the nodes and bearing solitary heads on the upturned branch apices.

KEY WORDS: *Erigeron*, Asteraceae, Astereae, México

Recent collections by Dr. Andrew McDonald from Cerro Quiexobra in southcentral Oaxaca revealed a number of previously undescribed species of various genera and families. Among these is a species of *Erigeron* sect. *Imbarba*. Only the two closest relatives of the new species (see comments below) occur outside of the Sierra Madre Occidental of México. Two other species, both from an area of high elevation in southern Chihuahua, have very recently been added to the original seven taxa of this section (Nesom 1989a, 1989b, 1990).

Erigeron quiexobrensis Nesom, sp. nov. TYPE: MÉXICO. Oaxaca: Cerro Quiexobra, 35 km ESE of Miahuatlán, 5 km NE of Santo Domingo Ozolotepec, 16° 10' N, 96° 15' W; on ridgetops and mountain saddles, rare in subalpine glades dominated by *Lupinus*, *Penstemon*, and misc. forbs, occasional in open pine forest, 3500-3700 m, 3 Oct 1990, A. McDonald 3005 (HOLOTYPE: TEX!; Isotypes: CHAPA, ENCB, MEXU, GH, NY, WIS, US).

Erigeronti galeottii (A. Gray ex Hemsley) E. Greene similis sed differt caulibus procumbentibus et acheniis glabris. *Erigeronti guatemalensi* (S.F. Blake) Nesom habitu similis sed foliis multo majoribus et capitulis minoribus floribus radii paucioribus differt.

Perennial herbs from rhizomes, producing rosettes of leaves and leafy, prostrate stems rooting at the nodes, ascending-erect at the ends and bearing terminal, solitary heads. Stems sparsely to moderately pilose with hairs mostly 1.0-1.8 mm long, eglandular. Basal leaves obovate, 4-6 cm long, 15-23 mm wide, with shallowly crenate margins and an attenuate but not distinctly petiolate base, moderately hairy above and beneath with ascending hairs, eglandular; cauline leaves oblong-obovate, 20-25 mm long, even sized along the stems, sessile, mostly subclasping, with crenate margins. Heads on merely bracteate peduncles 3-14 cm long and dilated immediately beneath the heads, the involucre 11-13 mm wide; phyllaries linear-lanceolate, herbaceous abaxially and adaxially, apparently without raised ribs, in 3-4 subequal series, the longest 5.5-7.0 mm long, with purplish, loosely spreading apices, sparsely pilose, eglandular. Ray flowers 75-105, the corollas white, purple tinged, 7-11 mm long, the ligules 1.2-1.5 mm wide. Disc corollas 1.6-2.4 mm long, broadly funnelform; collecting appendages of the style branches 0.1-0.2 mm long. Achenes obovate, 1.0-1.2 mm long, 0.4-0.6 mm wide, glabrous, shiny, compressed, with 2 thin, whitish nerves; pappus represented by only a minute, cartilaginous rim, bristles absent.

The only other species of *Erigeron* sect. *Imbarba* with a habit similar to that of the new species (producing only prostrate stems) is *Erigeron guatemalensis* (S.F. Blake) Nesom, but the latter produces much smaller leaves (the basal 2-10 cm long) and smaller heads (the involucre 8-10 mm wide) and fewer rays (55-75). *Erigeron galeottii* (A. Gray ex Hemsl.) E. Greene is similar to *E. quiezobrensis* in features of vestiture and in leaf, floral and fruit morphology and is probably most closely related to it, but the former produces only erect stems and has consistently strigose achenes. *Erigeron galeottii* is the most widespread species in the section, ranging from the Sierra Madre Occidental across the transvolcanic belt, and from there to its southern extremity in central Oaxaca, where it occurs within about 100 kilometers of Cerro Quiexobra. The range of *E. guatemalensis*, which is endemic to the Sierra Cuchumatanes of Guatemala, lies about 550 kilometers southeast of Cerro Quiexobra.

ACKNOWLEDGMENTS

I thank Dr. Billie Turner and Dr. Andrew McDonald for their comments and review of the manuscript.

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NEW TAXA OF *MONNINA* (POLYGALACEAE) FOR SOUTH AMERICA

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ABSTRACT

The following new species of *Monnina* (Polygalaceae) are described, illustrated, and affinities discussed: *Monnina grandifolia* (Colombia), *Monnina purpurea* (Ecuador), *Monnina fosbergii* (Ecuador), *Monnina piurensis* (Perú).

KEY WORDS: Polygalaceae, Colombia, Ecuador, Perú, *Monnina*, new species

During the revision of the genus *Monnina* (Polygalaceae) for the *Flora Neotropica*, I have been able to find several undescribed species of *Monnina* from Colombia (*M. grandifolia*); Ecuador (*M. purpurea*, *M. fosbergii*); Perú (*M. piurensis*).

Monnina grandifolia Ferreyra, *sp. nov.* (Figure 1). Type Collection: COLOMBIA. Tolima, Río Saldana, 1600-1800 m, *E. Core 1608* (HOLOTYPE: US 2046344).

M. colombianae Ferreyra *affinis*, foliorum laminis ellipticis spatulatis, acutis, mucronatis, sepalo exteriori acuto, sepalis duobus inferioribus liberis bracteis florigeris linearibus differt.

Branched shrub, branches glabrous; leaves elliptic-spathulate 150-300 mm long, 90-160 mm wide with 8-9 pairs of lateral veins, acute-mucronate, glabrous above, glabrescent beneath; panicle 150-200 mm long, racemes ascendent, bracts filiform, conspicuous at the apex; outer sepals free, lanceolate, acute, 1.2-2.0 mm long; wings 3.0-3.5 mm long, glabrous; keel 4.0-4.2 mm long, glabrous, orbicular; upper petals spathulate; stamens 8; ovary ovoid, 1.0-1.2 mm long, glabrous; style geniculate, glabrous; drupe more or less corrugate, pyriform-ovoid.

Distribution: Known only from the type collection.

This new species resembles *Monnina colombiana* Ferreyra, but it is quite distinct in its branches glabrous, the leaves elliptic, the upper sepals free, the drupe ovoid, etc.

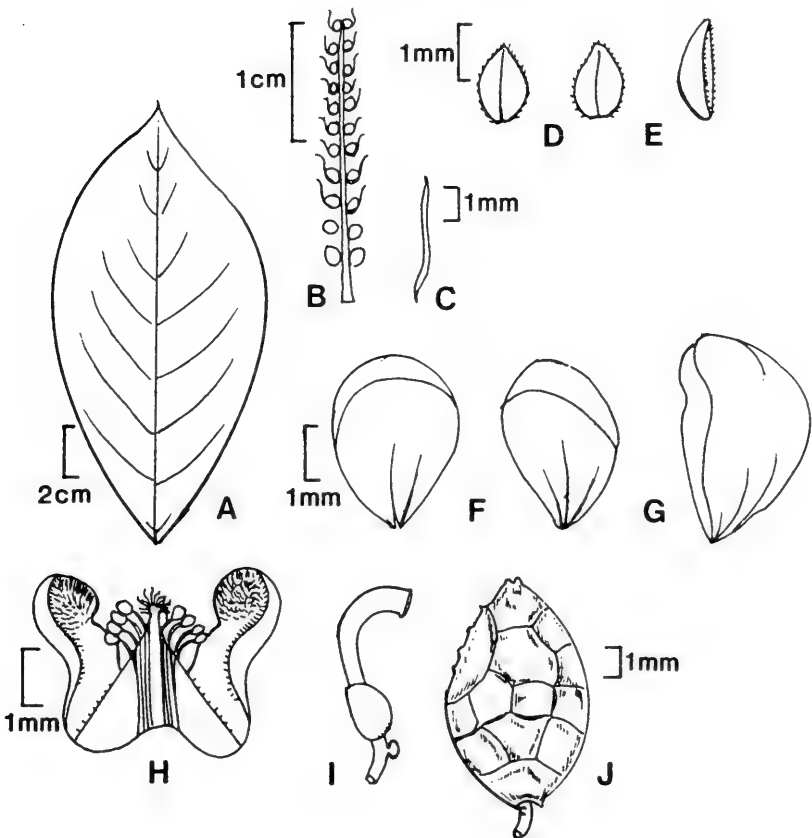


Fig. 1 *Monnina grandifolia* Ferreyra
A. leaf; B. raceme; C. bract; D-E. lower sepals; F. wings; G. keel; H. upper petals and stamens; I. gynaecium; J. drupe.

Monnina purpurea Ferreyra, *sp. nov.* (Figure 2). Type Collection: ECUADOR. Pichincha, Reserva Río Guayalito, carretera antigua de Quito a Santo Domingo, 1800-2200 m, V. Zak 1118 (HOLOTYPE: US 3120014; Isotypes: USM, QCA).

M. pterocarpae Ruiz & Pavon affinis, foliis majoribus laminis ad 310 mm longis supra viridibus, subtus purpureis differt.

Annual, glabrous, stem erect; leaves ovate-elliptic, 230-310 mm long, 130-150 mm wide, subsessile, obtuse or acute, with 8-9 pairs of lateral veins, glabrous, entire, greenish above, purpureous beneath; racemes 6, terminal, glabrous; flowers 5.0-5.5 mm long; outer sepals free, 1 nerved, ovate-triangular, obtuse, ciliate; the two lower ones 2.5-3.0 mm long, 1.6-1.8 mm wide, the upper sepal 2.6-3.2 mm long, 1.8-2.0 mm wide; wings purple, 4.8-5.8 mm long, 3.8-4.8 mm wide, obovate, more or less acute at base; keel glabrous within, obtuse at base, 3 nerved, apex lobulate; upper petals spatulate; stamens 8, the filaments short; ovary ovoid, 2.4-3.5 mm long, 1.0-1.6 mm wide, glabrous; style geniculate, glabrous; stigma lobulate; samara 7-9 mm long, 5-7 mm wide, glabrous, cordate, the wing slightly corrugate.

Distribution: Known only from the type locality.

The large leaves, purple beneath, terminal inflorescence and the purple flowers characterize this new species. It is closely related to *Monnina pterocarpa* Ruiz & Pavon from which it differs in having the leaves large, ovate-elliptic, purple beneath, the terminal and purple inflorescence with 6 racemes. In addition, the new species occurs in the subtropical and humid tropics ecosystem.

Monnina fosbergii Ferreyra, *sp. nov.* (Figure 3). Type Collection: ECUADOR. Azuay, Tablón de Oña, cerca Oña, 2740 m, R. Fosberg 29204 (HOLOTYPE: US 2109891). Paratype: Oña-Rancho Ovejero, 2700-2800 m, H.G. Barclay & P. Juajibioy 8497 (US).

M. filifoliae Chodat affinis, habitu glabro, foliis hirsutis, bracteis florigeris linearibus maioribus, stylo cylindrico differt.

Herb, erect, densely foliose; leaves lineate 1.2-1.5 cm long, 0.3-0.4 mm wide, slightly spatulate, hirsute, acuminate, sessile. Racemes simple, terminal, axis bracteate, the bracts linear, 5.0-6.5 mm long, hirsute, deciduous. Flowers purple, 5-6 mm long, pedicel 1.0-1.2 mm long, finely pubescent; outer sepals free, 1 nerved, ovate-triangular, acute, ciliate, the two lower ones 2.2-2.8 mm long, 1.5-1.8 mm wide, the upper one 2.5-3.2 mm long, 1.8-2.0 mm wide; wings 5.0-5.5 mm long, 3.5-3.8 mm wide, ovate, more or less obtuse at base, 3 nerved,

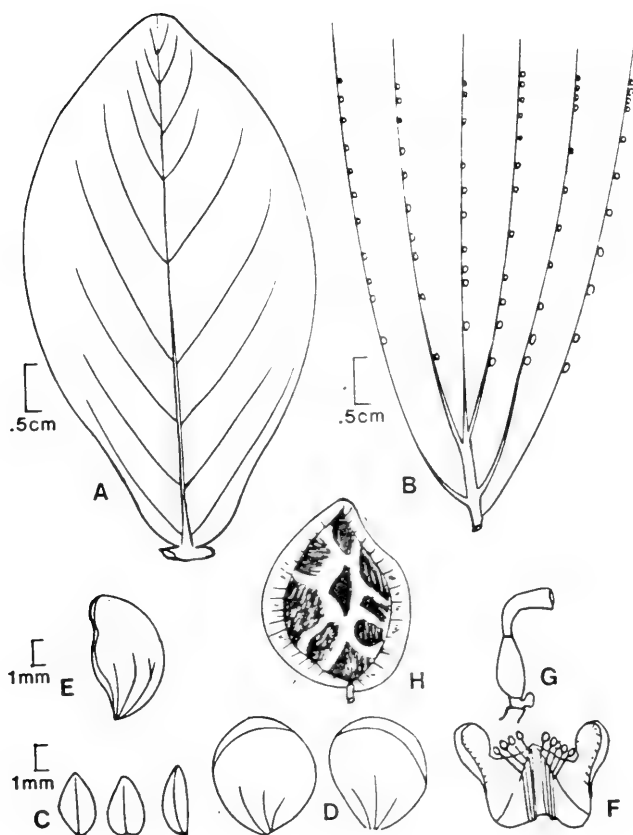


Fig. 2 *Monnina purpurea* Ferreyra

A. leaf; B. racemes; C. lower sepals; D. wings; E. keel;
F. upper petals and stamens; G. gynaecium; H. samara.

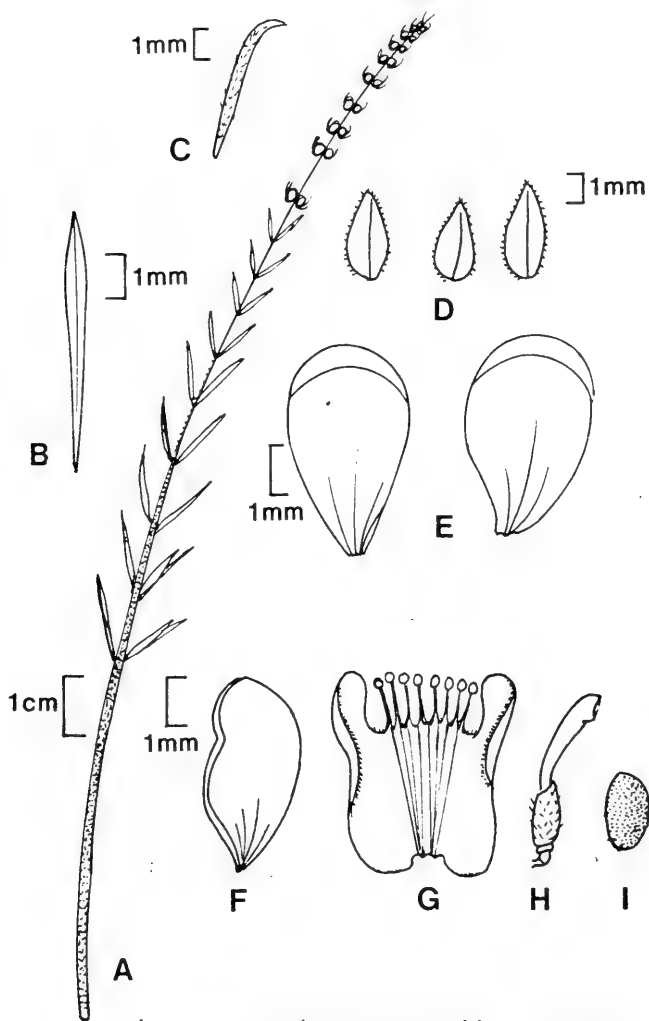


Fig. 3 *Monnina fosbergii* Ferreyra
 A. upper branch; B. leaf; C. bract; D.
 lower sepals; E. wings; F. keel; G. upper
 petals and stamens; H. gynaecium; I. drupe.

glabrous; keel 4.0-4.3 mm long, 2.0-2.5 mm wide, orbicular convolute, glabrous within, obtuse at base, 3 nerved, apex lobulate; upper petals elongate, almost spathulate; stamens 8, filaments to 1 mm long, united 2/3; ovary oblong 1.8-2.2 mm long, 0.8-1.2 mm wide, pubescent; style 2.2-2.5 mm long, geniculate above the base, cylindric, glabrous; stigma bilobulate, fruit drupaceous 2.2-2.8 mm long, oblong.

Distribution: Known only from the type locality.

The habit is very similar to *Monnina filifolia* Chodat, a species of southern Perú, from which it differs in having linear-spathulate, hirsute leaves, the style without wings, etc.

Monnina piurensis Ferreyra, *sp. nov.* (Figure 4). Type Collection: PERÚ.

Piura: near Piura on semidesert, sandy plain with grasses and spiny shrubs, *Ferreyra 5882* (HOLOTYPE: USM 24630; Isotype: US). Paratypes: PERÚ. Piura: Sullana, between Piura and Sullana, on sandy place, *Ferreyra 6005* (USM, US).

Planta herbacea annua radice simplici; caulis teres glaber; folia herbacea membranacea elliptico-lanceolata ad 10.5 cm longa, 4.5 cm lata; a *M. pterocarpae* Ruiz & Pavon cui affinis foliis maioribus bracteis florigeris filiformibus differt.

Annual herb, 50-70 cm high; root 14-20 cm long, 1-4 mm in diameter, simple; stem erect, terete; leaves elliptic-lanceolate, 8.0-10.5 cm long, 4.0-4.5 cm wide, acuminate, sometimes acute, glabrous, entire, membranaceous, subsessile, the costa with 6-8 pairs of nerves; racemes simple, terminal, bracteate, the bracts filiform, flexuose, 2-3 mm long, deciduous; flowers 4.0-4.2 mm long; outer sepals free, lanceolate, the two lower ones 1.5-2.0 mm long, 1.0-1.2 mm wide, glabrous, the upper one 2.2-2.6 mm long, 0.8-1.5 mm wide; wings violet, 3.8-4.5 mm long, 2.8-3.8 mm wide; keel purple, 4.0-4.5 mm long, 2.5-3.5 mm wide, orbicular, plicate, trilobate, the middle lobe obtuse-emarginate, larger; upper petals elongate, spathulate, pubescent; stamens 8; ovary elliptic-ovoid, 1.0-1.2 mm long, 0.5-0.8 mm wide; style 1.5-2.5 mm long, geniculate, cylindric, without wings; fruit samara 7-8 mm long, 5-6 mm wide.

Distribution: Known only from the Department of Piura, in sandy plain of the northern coast, between 100-150 m altitude.

The new species is very closely related to *Monnina pterocarpa*, but differs in the elliptic-lanceolate leaves, larger (up to 10.5 cm long, 4.5 mm wide) leaves with 6-8 pairs of lateral veins; the style cylindric without wings; the bracts of racemes filiform, flexuose, etc.

The habit of this plant suggests also *Monnina spruceana* Chodat from the páramo of Ecuador and *M. eriocarpa* Chodat from Central Bolivia, but it is different in the leaves, the style, and the bracts of the racemes.

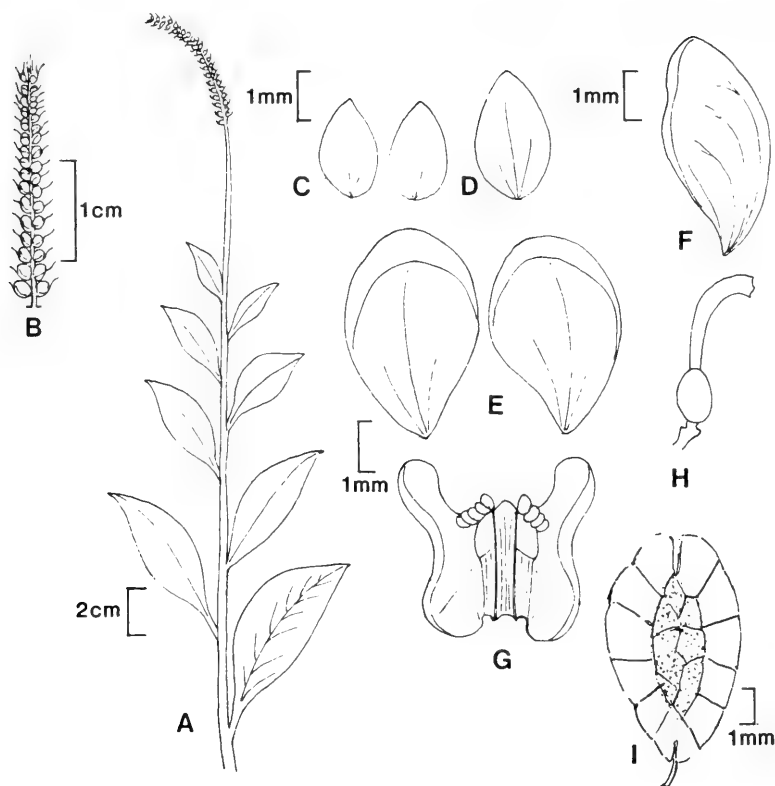


Fig. 4 *Monnina piurensis* Ferreyra

A. upper branch; B. raceme; C-D. lower sepals; E. wings; F. keel; G. upper petals and stamens; H. gynaecium; I. samara.

SENECIO MACDONALDII (ASTERACEAE), A NEW SPECIES OF THE
PSACALIOPSIS GROUP FROM OAXACA, MÉXICO

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ABSTRACT

Senecio macdonaldii *spec. nov.*, a new species belonging to the *Psacaliopsis* group of *Senecio* is described and illustrated. It is known only from southeastern Oaxaca, México on Cerro Quiexobra, where it occurs in subalpine glades between 3500-3700 meters.

KEY WORDS: *Psacaliopsis*, *Senecio*, Senecioneae, Asteraceae, México

Routine identification of Mexican Asteraceae has revealed the following new species from southeastern Oaxaca, México.

Senecio macdonaldii B. Turner, *spec. nov.* (Figure 1). TYPE: MÉXICO. Oaxaca: 35 km ESE of Miahuatlán, 5-10 km NE of Santo Domingo Ozolotepec, Cerro Quiexobra (ca. 16° 10' N, 96° 15' W), 3500-3700 m, in subalpine glades and open pine forests, on ridge tops and in "saddles," 3 Oct 1990, *Andrew McDonald 2992* (HOLOTYPE: MEXU; Isotype: MEXU).

Senecioni nubivago L. Williams (= *Psacaliopsis pudica* H. Robins. & Brettell) similis sed differt plantis elatioribus (50-75 cm altis vs. 10-30 cm) foliis caulium 1-2 multo redactis et involucris majoribus (14-18 mm altis vs. 10-12 mm).

Erect, nearly scapose, perennial herbs 50-75 cm high. Stems 4-5 mm across, puberulent when young, but glabrate with age. Leaves peltate, these mostly confined to or near the base, only 1 or 2 much reduced nonpeltate leaves occurring along the upper portion of the stem; basal leaves with petioles 6-12 cm long; blades circular or broadly oval in outline, the petiole attached at or near the center, 5-9 cm long, 5-10 cm wide, cottony to glabrate beneath,

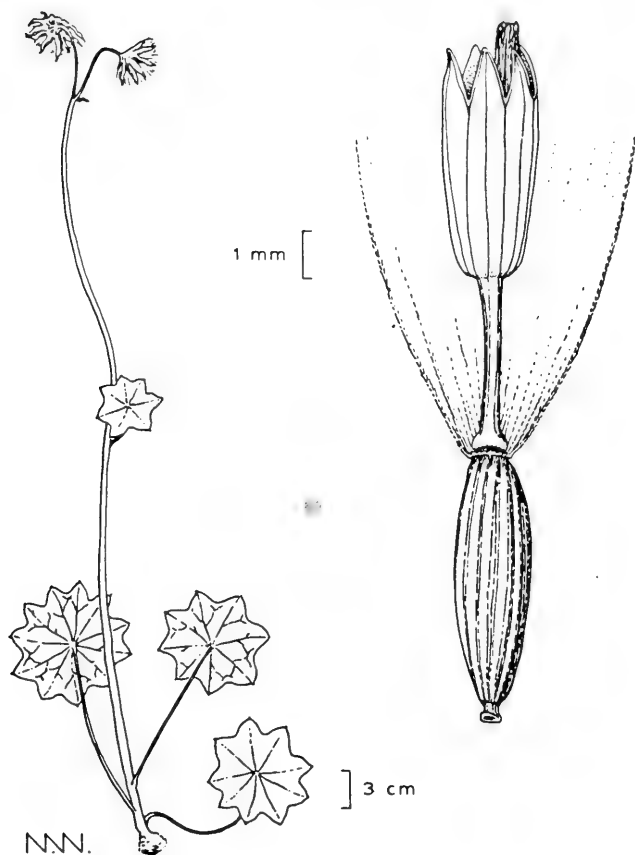


Fig. 1. Senecio macdonaldii, from holotype.

glabrous above, 8-10 lobed, the lobes about as wide as long, the margins entire or nearly so. Heads eradiate, campanulate, only 1 or 2 at the apices of stout peduncles, the latter 15-40 cm long, if heads 2, then the ultimate peduncles 4-5 cm long. Involucres 14-18 mm high, the bracts biseriate, lanceolate, subequal, purplish, pubescent, 4-5 mm wide, the apices acute. Receptacle 15-18 mm across, glabrous. Disk florets numerous, the corollas purplish, 8-9 mm long, glabrous, the tubes ca. 4 mm long, the limbs ca. 5 mm long, the lobes ca. 1.5 mm long. Anthers ca. 3 mm long, the appendages acute. Style branches long and coiling, the apices merely obtuse. Achenes fusiform, 6-8 mm long, 8-10 ribbed, glabrous, stipitate at the base for ca. 0.5 mm, the pappus of 30-40 barbellate bristles 7-8 mm long, these arranged in a single series, rather easily detached at the base.

Senecio macdonaldii, with its nearly acaulescent habit, peltate leaves, large, few, nodding heads, purple corollas with well developed tubes, and glabrous, 8-10 ribbed, stipitate achenes, clearly belongs to the *Psacaliopsis* group of *Senecio*, which is treated as a genus by Robinson & Brettell (Phytologia 27:402. 1974). *Psacaliopsis* heretofore contained but three species, but the recently described *S. paneroi* B. Turner (Phytologia 67:454. 1989) and the present, bring the total to five. In the forthcoming treatment of *Senecio* (sensu lato) for México, Turner & Barkley will include *Psacaliopsis* within *Senecio*, series *Palmatinervii*.

ACKNOWLEDGMENTS

I am grateful to Guy Nesom for the Latin diagnosis and to him and Dr. T. Ramamoorthy for reviewing the manuscript. Nancy Webber provided the illustration.

TWO NEW SPECIES OF *PASSIFLORA* (PASSIFLORACEAE)
FROM NORTHERN SOUTH AMERICA

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ABSTRACT

A taxonomic revision of *Passiflora* L. subgenus *Astrophea* (DC.) Mast., has revealed the presence of a new species, *Passiflora aragüensis* *spec. nov.* from the tropical forest of the state of Aragua in Venezuela. A second undescribed species, *Passiflora magnifica* *spec. nov.*, was discovered during intensive collecting efforts by the herbarium staff of HUA on the western slopes of the Cordillera Occidental in northern Colombia. This beautiful species is related to the edible, commercially valuable "granadilla", *P. ligularis* Juss. and is placed in subgenus *Passiflora* series *Tiliifoliae*. Both species are lianas with axillary tendrils, and both grow in moist habitats.

KEY WORDS: *Passiflora*, Passifloraceae, Colombia, Venezuela, taxonomy, new species

1. *Passiflora aragüensis* L. Escobar, *spec. nov.* TYPE: VENEZUELA. Aragua: Camino de Ronda de Guamitas, Parque Nacional, 12 Apr 1938 (fl), E. Delgado 124 (HOLOTYPE: F!).

Passiflora lindenianae Triana & Planchon similis sed differt cirrhis, fructibus fere sphaericis pubescentia albida lanata, et floribus filamentis coronae in seriebus 5-6. Differt a *P. costata* Mast. foliis ellipticis vel oblongis venis lateralibus paucioribus et floribus ac fructibus minoribus.

Lianas with concentric rings of secondary wood and weak tendrils, glabrous except for ovaries. Young stems terete, yellowish brown or greenish brown. Leaf blades elliptic to oblong, 10.7-19.3 cm long, 5.0-8.4 cm wide, acuminate to acute at apex, acute at base, entire at margins, subcoriaceous to coriaceous,

drying grayish green or brown, with 9-12 major lateral veins; foliar nectaries on abaxial surface of midvein ca. 3 mm from base, 2, or these divided into 4, oval, scarlike, 1.2-2.0 mm long, 0.4-1.1 mm wide; petioles stout, 2.0-3.5 cm long, 1.2-1.3 mm diam.; stipules triangular to ligulate, 2-4 mm long, 0.5-1.0 mm wide at base. Peduncles solitary in leaf axil, 7-10 mm long, 1.0-1.8 mm diam.; bracts dissitate, triangular, 0.7-1.0 mm long, ca. 4 mm wide at base. Flowers campanulate, ca. 3.5 cm long, ca. 3.5 cm diam., white with yellow corona; flower stipe stout, ca. 1 cm long, ca. 1.3 mm diam.; hypanthium campanulate, ca. 5 mm long and wide at base, ca. 8 mm wide at apex; sepals oblong, ca. 2.8 cm long, ca. 6 mm wide; petals subequal to sepals; corona in 5-6 series, the outer dolabriform, ca. 12 mm long, ca. 0.8 mm wide at base, widening to 1.3 mm ca. 4 mm from apex, the second series dolabriform, ca. 3 mm long, ca. 0.2 mm wide at base, to 1 mm wide at apex, the next 2 series linear, 1.5-2.0 mm long, ca. 0.3 mm wide, the innermost series filamentous, reflexed into hypanthium, ca. 1.3 mm long, 0.10-0.15 mm wide; operculum arising ca. 0.8 mm from apex of hypanthium, ca. 3 mm long, dependent then recurved, crenate at margin; ovary spherical, densely pubescent, with whitish lanate trichomes to 0.5 mm long; styles slender, ca. 7 mm long, ca. 0.6 mm diam., pubescent to apex. Fruits spherical or ellipsoid, 3.0-3.5 cm long, 2.4-4.0 cm wide (pressed), with brittle pericarp, greenish; seeds widely obovate, ca. 6.5 mm long, ca. 6 mm wide, with coarse reticulate pitting on testa.

Distribution. *Passiflora araguënsis* is known only from two collections made in the National Park of Guamitas at about 800 meters elevation.

Additional Specimens Examined. VENEZUELA. Aragua: Guamitas, Parque Nacional, 16 Jun 1939 (fr), *Ll. Williams 11194* (F, GH, US).

This species is placed in subgenus *Astrophea* (DC.) Mast. sect. *Astrophea* (Harms) Killip. It has been confused with *Passiflora lindeniana* Triana & Planchon, which it superficially resembles due to the bifurcate peduncles and which is found in the same general geographic area, but *P. lindeniana* is a tree, lacking tendrils, and is mostly found at higher elevations. The fruiting specimen of *P. araguënsis* is distinguished from *P. lindeniana* also by the more spherical fruit with long, whitish, lanate pubescence, and flowering specimens can be separated by the large number of series of coronal filaments.

Passiflora araguënsis also superficially resembles *P. costata* Mast., a liana found on inundated soils of the Amazon forest. However, that species produces mostly obovate leaves with a larger number of lateral veins, much larger fruits, and larger flowers.

2. *Passiflora magnifica* L. Escobar, *spec. nov.* TYPE: COLOMBIA. Antioquia: Municipio Frontino, Corregimiento La Blanquita, 14.5 km W of Nutibara (6° 45' N, 76° 25' W), 1-8 km S of Alto de Cuevas, 11 Jul 1988 (fl, fr), *R. Callejas, J. Betancur, I. Castaño, & A.L. Arbeláez 6586* (HOLOTYPE: HUA!; Isotype: MO!).

Passiflora ligulari Juss. f. *lobati* Mast. et *P. platylobae* Killip similis; ab specie prima differt bracteis majoribus 8.5-8.7 cm longis; ab specie secunda differt stipulis ligulatis 3.0 cm longis ca. 1 cm latis et petiolorum nectariis 4-6 elongatis.

Glabrous lianas with concentric rings of secondary wood and strong tendrils. Young stems terete to subangulate, striate, hollow, yellowish brown. Leaf blades widely ovate to very widely ovate, trilobed to $1/2$ - $2/3$ their length, 13-23 cm long, 14.8-27.5 cm wide, acuminate at apex of lobes, cordate at base, entire to very shallowly and remotely glandular serrate at margins, with scattered oval, subsessile dark brown nectaries 0.5-1.0 mm long in sinus of leaf lobes, membranaceous to subcoriaceous, drying yellowish green to dark khaki brown, with 5-7 major lateral veins; midlobes of leaves elliptic to oblong, 16.0-18.5 cm long, 6.4-10.0 cm wide; lateral lobes ovate, 13.5-21.0 cm long, 6.1-11.5 cm wide; petioles 7-11 cm long, 1.2-2.0 mm diam., with 2-6 mostly paired stipitate nectaries to 5 mm long scattered along upper $2/3$ of adaxial surface; stipules ligulate, 2.7-3.0 cm long, ca. 1 cm wide, acuminate at apex. Peduncles solitary in leaf axil, 9.5-12.0 cm long, 0.8-1.0 mm diam.; bracts ovate, verticillate, 7.8-8.7 cm long, 4.2-5.0 cm wide, connate 1.7-2.0 cm from base, acuminate at apex, obtuse at base, entire at margins, purple on adaxial surface. Flowers campanulate, pendent, ca. 4.5 cm long, ca. 4.5 cm diam., white to lavender, with purple corona; flower stipe slender, 1.0-1.1 cm long, 0.8-1.0 mm diam.; hypanthium short campanulate, 7-8 mm long, 8-12 mm wide at base, 10-14 mm wide at apex; sepals triangular, 2.5-3.0 cm long, ca. 8 mm wide at base, acuminate at apex, subcoriaceous, with subapical aristae 6-8 mm long on abaxial surface, light green on abaxial surface, lavender on adaxial surface; petals subequal to sepals, membranaceous, lavender; corona in 4 principal series, the outer 2 filamentous, ca. 2 cm long, ca. 2 mm wide, slightly wavy towards apex, striped in concentric bands with purple, the inner 2 series filamentous, 3-4 mm long, ca. 0.8 mm wide, followed by irregular, scattered tubercles on the upper $1/3$ of the hypanthium; operculum horizontal, ca. 5 mm long, lacerate almost to base, membranaceous, reddish purple; ovary ellipsoid to subspherical. Fruits subspherical, 6.0-6.5 cm long, 4.5-5.0 cm wide (pressed), with brittle, orange-yellow pericarp; seeds obovate, mucronate at apex, ca. 5 mm long, ca. 3.5 mm wide, with reticulate pitting on testa, dark brown at maturity.

Distribution. This species is so far known only from rainy, western slopes on the western Cordillera of Colombia. There are several collections from the region of Murri, Dept. of Antioquia, Colombia at elevations between 1250 and 1750 meters.

Additional Specimens Examined. COLOMBIA. Antioquia: Municipio Frontino, Corregimiento Murri, road from Nutibara to La Blanquita, 2 Jul 1983 (fl), Bernal, et al. 694 (HUA); km 22.6 from Nutibara to La Blanquita,

5 Nov 1988 (fr), Zarucchi, et al. 7157 (HUA).

Passiflora magnifica is placed in subgenus *Passiflora*, where it most closely resembles *P. ligularis* Juss. f. *lobata* Mast. It is easily distinguished from that taxon by the much larger bracts. The Central American species *P. platyloba* Killip, also possesses large bracts but has neither the large ligulate stipules nor the 4-6 elongated petiolar nectaries.

ACKNOWLEDGMENTS

I thank Dr. Guy Nesom for the Latin diagnosis and both him and Dr. B.L. Turner for critical reading of the manuscript.

TAXONOMIC STATUS OF *ZEXMENIA VILLOSA*
(ASTERACEAE-HELIANTHEAE)

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ABSTRACT

Zexmenia villosa Polak., which occurs from Costa Rica to southern México, is treated as a valid taxon within the *Lasianthaea fruticosa* (L.) K. Becker complex. A new combination, *Lasianthaea fruticosa* (L.) K. Becker var. *villosa* comb. nov., is proposed. The variety occurs mostly at higher elevations; at lower elevations it is replaced by the var. *fruticosa*. A map showing the distribution of these two varieties is provided.

KEY WORDS: Asteraceae, Heliantheae, *Lasianthaea*, *Zexmenia*, México, taxonomy

Becker (1979) provided a monograph of the genus *Lasianthaea*. In this he treated *L. fruticosa* (L.) K. Becker as a wide ranging highly variable complex composed of six, mostly allopatric, regional varieties. Unfortunately, he did not provide distributional maps for the complex. Turner (1989), with his description of *L. gentryi* B. Turner, a species closely related to *L. fruticosa*, provided a map showing the distribution of the varieties recognized by Becker. In this he accepted var. *fruticosa* as circumscribed by Becker, the latter treating *Zexmenia villosa* Polak. as synonymous with *Lasianthaea fruticosa* var. *fruticosa*. The purpose of the present paper is to suggest that *Zexmenia villosa* is a distinct populational taxon that is sympatric with the var. *fruticosa*, occurring at mostly higher elevations, and showing but little tendency, if at all, to intergrade with the latter taxon; indeed, the very few intermediates examined by the present author may represent an occasional hybrid. To my knowledge, however, the two taxa have never been found growing together, and the characters (largely vestiture) which distinguish these apparently do not vary appreciably within a given population. Nevertheless, as indicated in Figure 1 and Table 1, although the two taxa do not normally occur together, they are likely to occur near to one another upon occasion and an occasional hybrid might be expected.

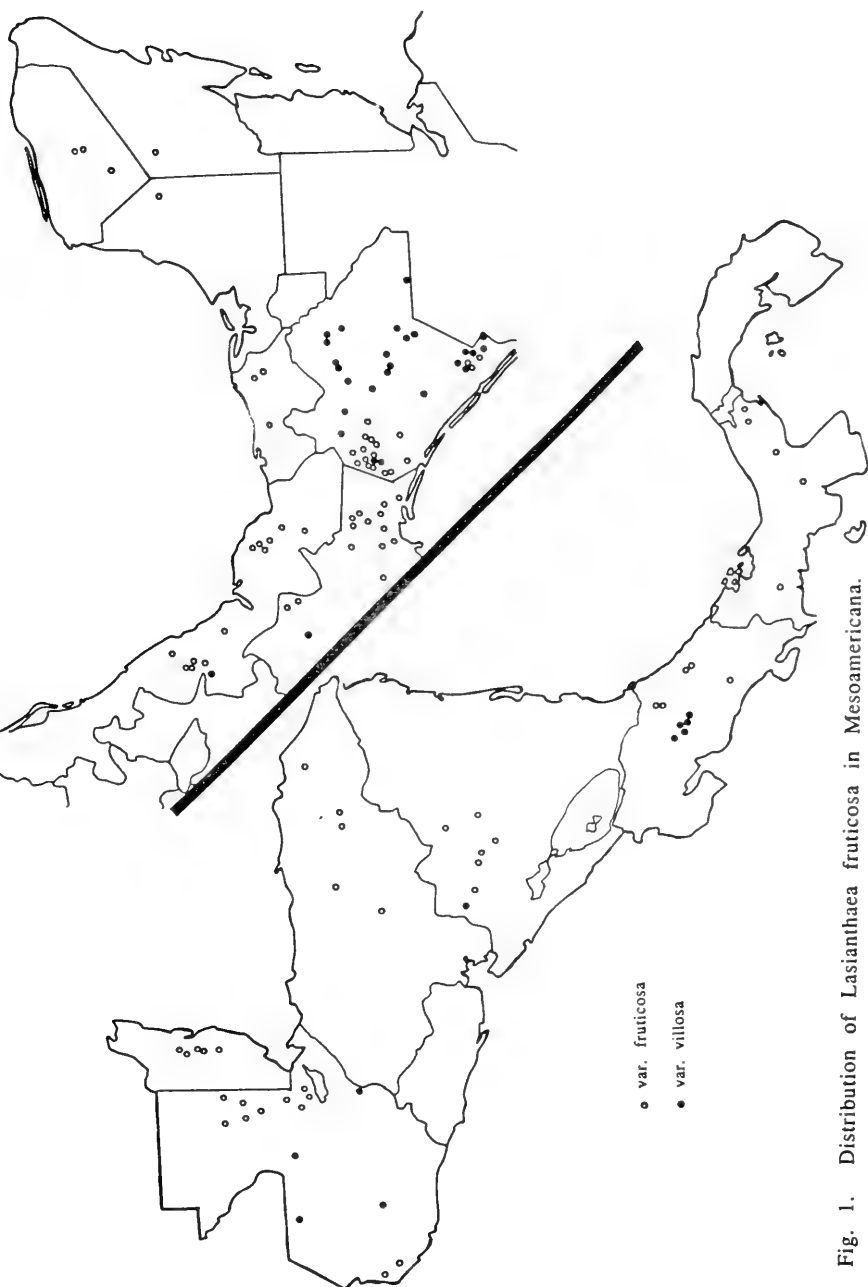
Fig. 1. Distribution of *Lasianthaea fruticosa* in Mesoamerica.

Table 1. Populations (arranged by municipalities) of *Lasianthaea fruticosa* (varieties *fruticosa* and *villosa*) from Chiapas, México and their associated elevations (all vouchered at LL, TEX).

var. <i>fruticosa</i>	var. <i>villosa</i>
Angel Albino: <i>Breedlove</i> 38606 (900 m)	Bochil: <i>Becker</i> 39 (1550 m)
Arriaga: <i>Breedlove</i> 28275 (830 m)	Cintalapa: <i>Breedlove</i> 36715 (900 m)
Arriaga: <i>Cronquist</i> 10458 (ca. 800 m)	Escuintla: <i>Matuda</i> 4200 (800 m)
Chiapa de Corzo: <i>Breedlove</i> 20495 (800 m)	Ixtápa: <i>Breedlove</i> 13806 (ca. 1200 m)
Chiapa de Corzo: <i>Laughlin</i> 2613 (ca. 800 m)	Margaritas: <i>Breedlove</i> 34089 (300 m)
Cintalapa: <i>Becker</i> 40 (600 m)	Motozintla: <i>Breedlove</i> 41662 (2100 m)
Cintalapa: <i>Breedlove</i> 28433 (850 m)	Ocosingo: <i>Breedlove</i> 22165 (900 m)
Cintalapa: <i>Breedlove</i> 52705 (870 m)	Ocosingo: <i>Wendt</i> 2361 (970 m)
Cintalapa: <i>Breedlove</i> 49005 (1250 m)	Ocosingo: <i>Colin</i> 1101 (ca. 160 m)
Cintalapa: <i>Breedlove</i> 48024 (1080 m)	Pantelho: <i>Calzada</i> 3580 (ca. 1250 m)
Huixtla: <i>Breedlove</i> 30925 (200 m)	Tenejapa: <i>Ton</i> 1141 (ca. 1500 m)
Ocozocoautla: <i>Breedlove</i> 21899 (900 m)	Tenejapa: <i>Ton</i> 1591 (ca. 1200 m)
Ocozocoautla: <i>Cronquist</i> 9679 (ca. 800 m)	Trinitaria: <i>Breedlove</i> 14127 (ca. 1550 m)
Ocozocoautla: <i>Torc</i> 3298 (ca. 700 m)	Trinitaria: <i>Breedlove</i> 41898 (1600 m)
San Fernando: <i>Breedlove</i> 41520 (850 m)	Union Juárez: <i>Calzada</i> 3701 (ca. 1360 m)
Tuxtla Gut.: <i>Cronquist</i> 10494 (ca. 1200 m)	Union Juárez: <i>Breedlove</i> 31671 (2200 m)

Lasianthaea fruticosa var. *fruticosa* is a wide ranging shrub or shrublet to 7 m high, which occupies lower montane tropical rain forests from near sea level to ca. 1200 m elevation. It is distinguished from *Zexmenia villosa* by its vestiture, possessing nearly glabrous leaves, the hairs mostly appressed and sparsely scattered over the undersurfaces, especially the major veins. In addition, the corolla lobes of *Z. villosa* are always to some extent pubescent, while those of var. *fruticosa* are glabrous. As suggested by its name, the leaf vestiture of *Z. villosa* is strikingly villous, the hairs usually numerous and always erect or ascending.

Blake (1915, J. Bot. 53:13) was the first to recognize the close relationship of *Zexmenia villosa* to *Lasianthaea fruticosa*. He reduced the former to varietal status under *Z. costaricensis* Benth. (= *L. fruticosa*). Becker (1979), in reducing *Z. villosa* to synonymy under his concept of *L. fruticosa* var. *fruticosa*, correctly noted that the "Degree of pubescence [within var. *fruticosa*] seems to be related to altitude. Plants from lower elevations (down to sea level) are less pubescent, often almost glabrous, while plants from higher elevations (to pine and cloud forest) tend to be more pubescent, often densely so." He further stated that "*Zexmenia villosa* represents a particularly densely pubescent form well within the normal range of variation for the variety." The latter statement is perhaps true if one accepts all of the other collections of var. *fruticosa* cited by Becker (other than the type of *Z. villosa*), but if one looks carefully at the distribution of vestiture types within his var. *fruticosa* (both as regards type of hairs and degree of pubescence), it will be noted that there is almost complete congruence of the villous condition with high elevations; intermediates are few and even these might reflect aging or near glabrate individuals of otherwise villous types. Or, as noted above, such plants might represent an occasional sympatric hybrid between var. *villosa* and var. *fruticosa*.

In treating the high elevational villous populations of *Lasianthaea fruticosa* var. *fruticosa* (sensu Becker) as a varietal taxon, I follow the treatment of Blake. This would appear to be the more prudent and conservative nomenclatural course, largely because I have not found yet other morphological characters which cohere with those of vestiture. Such characters might very well exist, however, and future field and experimental workers might choose to treat these as sympatric species, in which case a new specific combination will have to be made.

Figure 1 (based upon approximately 180 specimens at LL, TEX) shows the distribution of the two varieties, var. *fruticosa* occurring at mostly lower elevations, as already noted. The largest and best assemblage of the two taxa in the LL, TEX herbaria occurs in Chiapas, México. Table 1 lists the collections from that state, and the elevations from which they were reportedly obtained. In none of these populations were the two taxa found to coexist, although they occur near each other in both western and southeastern Chiapas. Except for two collections, all of the collections of var. *villosa* were collected above 800

m, if not 900 m. Those of var. *fruticosa* ranged from 200 m to 1250 m, but most were collected below 900 m.

My interpretations of vestiture variation in *Lasianthaea fruticosa* var. *fruticosa* (sensu Becker) is that two ecologically and morphologically distinct taxa are represented, and that the high elevational villous entity is best treated at the varietal level, as follows:

Lasianthaea fruticosa (L.) Becker var. *villosa* (Polak.) B. Turner, *comb. nov.* BASIONYM: *Zezmenia villosa* Polak., *Linnaea* 41:579. 1877.

Synonyms of the above name include the following:

Zezmenia costaricensis Benth. var. *villosa* (Polak.) Blake, *J. Bot.* 53:14. 1915.

Zezmenia macropoda S.F. Blake, *Contr. U.S. Natl. Herb.* 22:634. 1924.

ACKNOWLEDGMENTS

I am grateful to Guy Nesom and Andrew McDonald for reviewing the paper.

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TAXONOMIC NOTES ON *CALATHEA* (MARANTACEAE) FROM THE
VENEZUELAN GUAYANA: A NEW SPECIES AND A NEW COMBINATION

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ABSTRACT

Calathea neblinensis *spec. nov.*, which occurs in Amazonas in Venezuela and Brasil, and in Vaupés in Colombia, is described as new. *Calathea cannoides* *comb. nov.* is based on *Thymocarpus cannoides* Nicolson, Steyermark, & Sivadasan, from Venezuela and Brasil. The new species and new combination are needed for inclusion in the treatment of *Calathea* for the *Flora of the Venezuelan Guayana*.

KEY WORDS: *Calathea*, Marantaceae, nomenclature, taxonomy, Venezuelan Guayana

Calathea neblinensis Kennedy, *spec. nov.* TYPE: VENEZUELA. Amazonas: Dept. Río Negro, near Cerro de La Neblina Base Camp which is on Río Mawarinuma, in forest near stream, 140 m, 0° 50' N, 66° 10' W, 5 Feb 1984, R.L. Liesner 15662 (HOLOTYPE: MO; Isotypes: F, NY).

Planta ad 1.1 m alta. Folia basalia 3-7(9), lamina anguste obovata vel elliptica, acuminata, basi cuneata, ad 60 X 11 cm, supra obscure viridia, glabra, secus costa glabra vel minute tomentosa, subtus viridi-grisea vel purpurea, glabra, vel sparse minute tomentosa; pulvinus glaber vel supra tomentosus, 2.3-5.5 cm longus cum porca ad juncturam pulvini et petioli; petiolus ad apicem glaber, prope basin tomentosus vel villosus, 0-47 cm longus; vagina tomentosa vel villosa ad basin, 11-43 cm longa. Spica ovoidea ad 8 X 4.5 cm, pedunculo prope basin tomentoso vel villosus, ad 14.5 cm longo; bracteae 12-32, spiraliter dispositae, obovatae vel interdum ovatae, obtusae, virides vel purpureae, minute tomentosae ad marginem vel ubique tomentosae, ad 4 X 3.5 cm; bracteolae 2, indurato-claviculatae; sepala 11.5-15.0 mm longa; corolla alba, staminodia alba. Capsula obovoidea, ca. 11 X 8 cm, semina ca. 6 X 5 mm.

Acaulescent to shortly caulescent herb, (0.47)0.65-1.1 m high, bearing 3-7(9) basal leaves and none cauline. Cataphylls narrowly ovate, apex acute, reddish purple, densely pubescent, base sericeous, to 45 cm long. Leaf blade chartaceous, narrowly obovate to elliptic, apex acuminate, occasionally obtuse with acumen, base narrowly cuneate; (18)25-60 X (3.6)6.5-11 cm, secondary veins (12)14-21 per 3 cm, cross veinlets 32-40 per 5 mm. Leaf blade above dark green, glabrous, midrib lighter green, glabrous or minutely tomentose; leaf surface below light greyish green or deep red-purple, glabrous except for very margin minutely appressed tomentose, occasionally minutely tomentose throughout, midrib appressed tomentose. Pulvinus elliptic in cross section, olive green or purplish, glabrous or minutely tomentose along upper side, articulate, commonly with a slight ridge (ridge frequently tomentose) at junction with petiole, (1.5)2.3-5.5 cm long. Petiole green or tinged with purple, glabrous or subglabrous above, pubescent below, 0-47 cm long. Leaf sheath green tinged red-purple, sides appressed tomentose to villous, margin ciliate, sericeous at base, center back glabrous to subglabrous apically, 11-43 cm long. Stem internodes between basal leaves sericeous.

Inflorescence 1 (rarely 2), terminal on the leafy shoot, borne below the leaf blades, imbricate, ovoid, 5.4-8.0 X 2.8-4.5 cm. Peduncle reddish purple, glabrous to subglabrous just below the inflorescence, densely tomentose to villous toward base, especially on swollen basal portion, (1.5)6.5-14.5 cm long. Bracts 12-32, spirally arranged, variable in shape, obovate to occasionally depressed ovate, apex obtuse, rarely retuse in basal bracts, upper bracts proportionally longer and narrower, 2.1-4.0 X 1.6-3.5 cm; each bract subtending 3 or more flower pairs. Outer surface of bracts green to purple, minutely tomentose along margin, the central portion subglabrous to densely tomentose or subvillous throughout; inner surface glabrous or tomentose apically. Bicarinate prophyll membranaceous, ovate, apex obtuse or asymmetrically lobed with one side higher than the other, glabrous, (1.5)2.3-4.4 X 1.1-1.6 cm, 0.7-1.2 cm wide, carina to carina. Secondary bract membranous, narrowly elliptic to ovate, apex rounded, glabrous or occasionally with margins pilose, 2.2-3.2 X 1.0-1.4 cm. Bracteoles 2 per flower pair, claviculate, medial, (2)2.3-3.6 cm long.

Sepals narrowly ovate to oblong, acute to obtuse, nearly glabrous (few hairs seen at 30X) to pilose, more densely so toward base, 11.5-15.0 X 2 mm. Corolla and staminodes white; corolla tube glabrous; corolla lobes subequal, elliptic to obovate, anther ca. 2 mm long. Ovary glabrous or with dense fringe of hairs at apex, ca. 2 mm long.

Capsule obovoid with raised rim, ca. 11 X 8 mm; crowned by a persistent calyx. Seeds triangular, ca. 6 X 5 X 4 mm.

Other collections: VENEZUELA. Amazonas: Cerro de La Neblina, Río Yatua, rain forest SE of Base Camp, 140 m, 14 Dec 1953 *B. Maguire, J.J. Wurdack, & G.S. Bunting* 36777 (NY); 29 Jan 1954, *B. Maguire, J.J. Wur-*

dack, & G.S. Bunting 37400 (NY); Cerro Neblina, trail due S from base camp, mature lowland forest, 140 m, 0° 50' N, 66° 10' W, 10 Apr 1984, A. Gentry & B. Stein 46521 (VEN); 27 Apr 1984, A. Gentry & B. Stein 47019 (VEN); Dept. Río Negro, Neblina Base Camp on the Río Mawarinuma, low-lying rain forest near river, 140 m, 0° 50' N 66° 10' W, 17 Jul 1984, G. Davidse & J.S. Miller 27433 (MO, UBC); 2 km E of San Carlos de Río Negro, ca. 20 km S of confluence of Río Negro and Brazo Casiquiare, forest with white sand soil, edge of stream, 120 m, 1° 56' N 67° 03' W, 7 Apr 1979, R.L. Liesner 6348 (MO); Dept. Río Negro, laja at Culimacare along the Brazo Casiquiare, lowland rain forest and bamboo patch surrounding laja, 80 m, 1° 58' N, 66° 50' W, 26 Jul 1984, G. Davidse 27918 (MO).

COLOMBIA. Vaupés: Río Piraparaná, environs of Catholic mission of San Miguel, trail to old runway, 24 Oct 1976, E.W. Davis 127a (F), 127b (F); environs of Mitú, trail from the house of Enrique Portua to the Cerro of Mitú, in wet primary forest, 30 Oct 1976, E.W. Davis 196 (F, GH); Riberas del Río Inírida (69° 45' W), Raudal Guacamayo, left bank, 180 m, 4 Feb 1953, A. Fernández 2131 (US).

Calathea neblinensis is characterized by the several clustered basal leaves with cuneate bases and a raised ridge (more evident in dried material) at the junction of the petiole and the pulvinus, the usually single inflorescence of all fertile (flower subtending) bracts, the claviculate bracteoles and white corolla and staminodes. It belongs to *Calathea* section *Breviscapus* Benthham in the broad sense. This species shows considerable variation over its range. The Colombian plants tend to be smaller with proportionally narrower, more coriaceous leaves and fewer, more densely pubescent bracts than the Venezuelan plants. One plant, from São Paulo de Olivença, Amazonas, Brasil (Mori, et al. 9180), which may pertain to this species, is unusual in having densely pubescent bracts with slightly reflexed margins and broader, obtuse leaf bases. However, intermediate individuals between it and the Venezuelan plants have not been seen.

The specific epithet, *neblinensis*, refers to the prevalence of this species in the vicinity of Cerro de La Neblina.

Calathea cannoides (Nicolson, Steyermark, & Sivadasan) Kennedy, *comb. nov.* BASIONYM: *Thymocarpus cannoides* Nicolson, Steyermark, & Sivadasan, Brittonia 33:24, Fig. 1. 1981. TYPE: VENEZUELA. Bolívar: southeast end of Cerro Pitón, Cordillera Epicara, Alto Río Cuyumi, 40 m, 5 Sep 1962, B. Maguire, J.A. Steyermark, & C. Maguire 53608 (HOLOTYPE: VEN [sheet 1, inflorescence]; Isotypes: VEN [sheet 2, leaf], NY, MO, US).

Calathea cannoides is indeed an unusual and distinctive species, having greatly reduced and totally thickened calviculate bracteoles. These are similar

in shape to those found in some Asian and African taxa (Nicolson, *et al.* 1981). However, specimens of *Calathea* aff. *straminea* Petersen (*Prance 24012* [NY]) from Amazonian Brasil and Perú, have reduced, shortened, clavicate bracteoles 4-5 mm long, intermediate between those of *C. cannoidea* and those of other species in the "Ornata group" of *Calathea*. This indicates that the reduction of the clavicate bracteoles found in *C. cannoidea*, though unusual for *Calathea*, are not necessarily independently derived. Occasionally, the clavicate bracteoles are vestigial or absent in some individuals within a single population, such as in *C. bantae* Kennedy (Kennedy 1986).

In addition to the striking bracteole morphology mentioned above, Nicolson, *et al.* (1981) noted the following features as characteristic of the new genus *Thymocarpus*: the muricate capsule, the inflorescence borne on a separate shoot, the deciduous prophylls and secondary bracts (both structures noted as "bracts" which, after falling, expose the "...pairs of flowers each borne on its own peduncle." The unusual features of the habit, inflorescence structure and capsule morphology which characterize this species, and hence the genus, are shared to varying degrees with other members of the "Ornata group" in *Calathea*. A tuberculate capsule is found in *Calathea straminea* (the species most closely related to *C. cannoidea*) and *C. bantae*. The capsule of a Panamanian *Calathea* (*Foster & Vocolka 2194* [DUKE]) is distinctly muricate. (This population may represent a distinct subspecies or a very closely related sister species of *C. bantae*). The inflorescence is borne on a separate leafless shoot in *C. zingiberina* Koernicke, *C. elliptica* (Roscoe) Schumann, and *C. straminea*, all members of the "Ornata group." The inflorescence borne on a separate leafless shoot is also characteristic of the unrelated group of species in *Calathea* section *Rhizanthae*. In fact, *C. zingiberina* was initially included in *Calathea* section *Rhizanthae* (Schumann 1902) based on the inflorescence position. In several species of *Calathea* which have the inflorescence borne on a separate shoot, the leafy shoots bear only a solitary leaf. Single leaves per shoot are characteristic of most species in *Calathea* section *Rhizanthae*, such as *C. lancifolia* Boom, *C. bella* (Bull) Regel, *C. vaginata* Petersen, and *C. applicata* Morren. Single leaves are also found in *C. elliptica*, *C. straminea*, and *C. zingiberina* of the "Ornata group." Deciduous bicarinate prophylls are found in *C. bantae* (Kennedy 1986, fig. 1C), *Calathea* sp. (*Foster & Vocolka 2194* [DUKE]) and *Calathea* aff. *straminea* (*Prance 24012* [NY]). According to Schumann (1902, p. 111), in *C. straminea*, the prophyll and secondary bracts (as "mesophyllaque") are absent. In *C. gymnocarpa* Kennedy, both the (primary) bracts and prophylls rot off, leaving the capsules exposed, the secondary bracts are absent altogether.

With the exception of the greatly reduced bracteoles and the deciduous secondary bracts, the additional characters cited are all shared with other species of *Calathea*, especially those in the "Ornata group." Although the combination of characters as a whole is unique, the unusual bracteole mor-

phology and deciduous secondary bracts alone do not constitute a significant enough difference to merit generic status. In addition, this species has a number of additional characters in common with species in the "Ornata group" such as leaf texture, floral morphology, capsule type, bract morphology, and the flower pairs borne on an elongate common pedicel (flower peduncle). It clearly belongs in the genus *Calathea*.

ACKNOWLEDGMENTS

I would like to thank Dr. Paul Berry, Dr. John Kress, Dr. Paul Maas, and Dr. Fred Ganders for their reviews and helpful comments on the manuscript. I also thank the curators of DUKE, F, MO, NY, and VEN for the loan of their material.

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NOTES ON THE OCCURRENCE OF *PLATANATHERA INTEGR*A (NUTT.) A.
GRAY *EX* BECK (ORCHIDACEAE) IN WEST CENTRAL LOUISIANA

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ABSTRACT

Platanthera integra (Nutt.) A. Gray *ex* Beck, considered to be critically imperiled in Louisiana, was found to occur in 35% of bogs surveyed in the Kisatchie District of the Kisatchie National Forest. Limited data suggest that winter fire stimulates its growth and flowering.

KEY WORDS: *Platanthera integra*, Louisiana, Orchidaceae, Pitcher plant bog, Kisatchie National Forest

Platanthera integra (Nutt.) A. Gray *ex* Beck, the Yellow Fringeless Orchid, is considered rare (Ayensu & DeFillips 1978, Federal Register 1980, Kral 1983, Mohlenbrock 1983), although *The Official World Wildlife Fund Guide to Endangered Species of North America* does not list it (Lowe, *et al.* 1990). The plant is listed in the "Louisiana Special Plant List" (Natural Heritage Program 1989) as critically imperiled in the state. It is also on the Kisatchie National Forest "PETS" (proposed endangered, threatened, or sensitive species) list. The species is distributed from east Texas across the southern states to New Jersey and is limited to acid bogs and seeps (Kral 1983). A review of recent literature concerning this plant (Holmes 1983, Kral 1983, Bridges & Orzell 1989a, Luer 1975, MacRoberts 1989) has shown an acute need for information that may amplify or modify what is currently known. Our comments, based on field observations made between 1988 and 1990 mainly in the Kisatchie District of the Kisatchie National Forest, should provide additional information that will permit a more accurate assessment of this plant as rare, endangered, or threatened.

The species has been documented from Natchitoches, Beauregard, Calcasieu, St. Tammany (Holmes 1983) and, more recently, Vernon Parish (MacRoberts & MacRoberts 886 [LSUS], Annette Parker pers. comm.). Roland (1986) reports *Platanthera integra* from Lincoln Parish, upon whose authority MacRoberts (1989: 148) includes Lincoln Parish in his distribution map for *P.*

Table 1. Characteristics of bogs with *Platanthera integra*.

Bog	Size ha.	No. of plants		Burned winter 1989-90	Percent change
		1989	1990		
Frog Arrow Bog Bayou L'Ivrogne	2.6	135	310	yes	+130
Hooker	0.4	103	26	no	-74
360 B	0.1	24	24	yes	0
Cow (New)	0.9	15	11	yes	-27
360 A	1.6	8	23	yes	+187
311	2.2	2	3	yes	+50
	1.5	2	3	yes	-50

integra. Roland's voucher specimen is supposed to be in the LTU herbarium, but it could not be located there (Don Rhodes pers. comm.).

In order to obtain an estimate of the frequency of occurrence and abundance of *Platanthera integra*, in 1989 we surveyed 20 bogs in the Kisatchie District of the Kisatchie National Forest, Natchitoches Parish, during August and September, when *P. integra* is in bloom and is conspicuous. The bogs ranged from 0.1 to 3 ha and averaged 0.9 ha (see MacRoberts & MacRoberts 1988, 1990 for a description of Kisatchie bogs, and Bridges & Orzell 1989b for a description of hillside seepage bogs). In August and September 1990 we resurveyed the bogs that had *P. integra*. None had been burned in the year preceding our initial survey, but all except one were burned in the winter of 1989-1990.

Table 1 summarizes our main findings. We found *Platanthera integra* in seven (35%) of the twenty bogs surveyed. These bogs ranged from 0.1 to 2.6 ha. There appeared to be no correlation between size of bog and presence or abundance of this taxon.

The effects of fire on flowering of plants has been the subject of much recent research (e.g., Platt, *et al.* 1988). Komarek (1974) and Kral (1983) have emphasized the fire dependent nature of *Platanthera integra*. Bridges & Orzell (1989a) state that even though they made repeated visits to an area, they did not find the taxon until the area was burned. As can be seen in Table 1, most bogs burned in 1989-1990 showed an increase in *P. integra* flowering. Most spectacular were Frog Arrow and Cow (New) Bog. Bog Bayou L'Ivrogne (a.k.a. Fixit Bog) (MacRoberts & MacRoberts 1990), the only bog not burned in 1989-1990, showed a dramatic decrease from the previous year. However, since all bogs that were burned did not show an increase in *P. integra* flowering (Hooker, 360B), the effect of winter burns is not clear. However, peak blooming of all bogs that were burned was advanced by two to three weeks.

Peak blooming in 1989 was in early to middle September. In 1990 it was in middle August for all bogs except Bog Bayou L'Ivrogne, which did not bloom until early September.

Platanthera integra appears to be confined to bogs; the preservation of this habitat is essential to the survival of the species. However, we were struck by the uneven distribution of this species in what appears to be suitable habitat. Most bogs do not have *P. integra* and where it does occur, it is usually in fairly small numbers making it vulnerable to local extinction by random processes. However, in some localities it is very common. Of all the bogs we have surveyed in the Kisatchie District of the Kisatchie National Forest, one (Frog Arrow) has over fifty percent of all plants known for the district. Put another way, in 1989 46% and in 1990 78% of known *P. integra* in the Kisatchie District occurred in one 2.6 ha. bog. Destruction of a single bog, therefore, could result in the extinction of the majority of plants in a given area. Special management considerations should take this fact into account.

ACKNOWLEDGMENTS

Thanks are due D.T. MacRoberts, Nelwyn McInnis, Latimore Smith, Ella Edwards, Don Rhodes, Robert Kral, and Walter Holmes for their help with various aspects of the study. The continued cooperation and help of the staff of the Kisatchie National Forest is appreciated.

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TIPIFICATION OF MEXICAN ASTEREA (ASTERACEAE), BASED ON SPECIMENS IN THE HARVARD UNIVERSITY HERBARIA

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ABSTRACT

Lectotypifications and clarifications of typification are presented for various Mexican taxa of *Erigeron*, *Laennecia*, and *Baccharis*. The names for these were originally proposed in *Achaetogeron*, *Aster*, *Conyza*, and *Erigeron*.

KEY WORDS: *Erigeron*, *Laennecia*, *Baccharis*, Astereae, Asteraceae, typification

Recent studies and annotations by the second author of collections in the Harvard University Herbaria have brought attention to unresolved problems in typification of Asteraceae and pointed out the need for lectotypification in a number of instances. Some taxonomic problems were clarified by consulting sheets bearing a tracing (made in Berlin in August 1901 by J.M. Greenman [JMG]) of a type specimen from B, and mounted for GH with fragments of the specimen. In each of the following citations the currently accepted name is in boldface.

1. *Conyza coulteri* A. Gray, Proc. Amer. Acad. Arts 7:355. 1868. SYNTYPES: UNITED STATES. California: *T. Coulter 285 & 286* (GH). ***Laennecia coulteri*** (A. Gray) Nesom, *Phytologia* 68:217. 1990.

In the original publication of *Conyza coulteri* A. Gray, Gray cited only two collections, Coulter's 285 and 286. The material in the Gray Herbarium consists of only a few, small fragments in a single packet annotated by Gray as "Hb. Harvey." Both of Coulter's collection numbers are written on the packet,

which itself is mounted on a sheet with four other separate collections of the same species. William H. Harvey was the Keeper of the University Herbarium at Trinity College (TCD), and in fact followed Thomas Coulter in that post. Coulter left the Trinity College herbarium a large collection of specimens from California and México (Ducker 1988). The original collections of Coulter's 285 and 286, one of which should be chosen as the lectotype, should be sought there.

2. *Erigeron eriophyllus* A. Gray, Smithsonian Contrib. Knowl. 5 [*Pl. Wright*. 2]:77. 1853. LECTOTYPE (designated here): MÉXICO. Sonora: on the Sonoita, near Deserted Rancho, Sept [1851], *C. Wright s.n.* (GH). *Conyza eriophylla* (A. Gray) Cronq., Bull. Torrey Bot. Club 70:632. 1943. *Laennecia eriophylla* (A. Gray) Nesom, Phytologia 68:218. 1990.

Collection data on the label of this specimen give only "Sonora," but it is annotated in Gray's hand as "*E. (Coenotus) eriophyllum* n. sp." No other specimens have been located at GH that might be construed as type material. Nesom (1990) cited this sheet as the holotype and incorrectly noted that it was collected in Arizona.

3. *Erigeron calcicola* Greenman, Proc. Amer. Acad. Arts 41:256. 1905. LECTOTYPE (designated here): MÉXICO. Hidalgo: chalk bluffs of Dublan, 6800 ft, 16 Sep 1902, *C.G. Pringle 9899* (GH!).

Greenman cited this collection among other syntypes: *Palmer 20*, *Parry & Palmer 391*, and *Pringle 8223*.

4. *Aster lepidopodus* B.L. Robins. & Fern., Proc. Amer. Acad. Arts 30:117. 1894. TYPE: MÉXICO. Chihuahua: in pine forest about Chachuichupa, 14 Jun 1891, *C.V. Hartman 697* (HOLOTYPE: GH!; Isotypes: US-2 sheets!). *Erigeron lepidopodus* (B.L. Robins. & Fern.) Nesom, Sida 9:31. 1981.

The GH sheet is believed to have been annotated by Mary A. Day, who worked at the Gray Herbarium with Robinson & Fernald, as "*Aster lepidopodus* Rob. & Fern. n. sp." Although Robinson & Fernald did not specifically note their specimen was housed at GH, no other specimen was cited. Nesom (1981) incorrectly cited one of the US sheets as the holotype.

5. *Erigeron foliosus* Nutt. var. *tenuissimus* A. Gray, *Syn. Fl. N. Amer.* 1(2):215. 1844. LECTOTYPE (designated here): MÉXICO. Baja California Norte: Hansen's ranch, 30 Jul 1883, *C.R. Orcutt 1000* (GH!). *Erigeron foliosus* Nutt. var. *stenophyllus* (Nutt.) A. Gray; not *E. tenuissimus* E. Greene.

This specimen is selected from among several syntypes. In the original publication, Gray cited "San Diego Co. on the Mexican border, and within Lower California, Parry, Palmer, Orcutt."

6. *Conyza panamensis* Willd., *Sp. Pl.* 3:1942. 1803. TYPE: "PANAMÁ," *Humboldt s.n.* (Probable HOLOTYPE: B, tracing by JMG and fragment GH!). *Baccharis* sp.

According to the annotation by Greenman, the tracing is "of the original." De Candolle (*Prodr.* 5:390. 1836.) noted that this species, from the description, probably was *Baccharis*, and Schultz-Bipontinus later ("8/6/52") annotated the B specimen as "*Baccharis panamensis*" (an unpublished name). Hemsley (1881) listed it as a species of *Conyza* from Panamá without comment, but the name was not included in the recent *Compositae of Panamá* (D'Arcy 1975) and we have not been able to find any published elucidation of its identity.

The identification of this specimen as *Baccharis* or *Archibaccharis* is unequivocal, but the determination of the species is more problematic. The fragment consists of one staminate head and the distal two-thirds of a leaf. The morphology of the plant is summarized in the following paragraph.

Stems straight or arching, not fractiflex. Leaves sessile or nearly so, narrowly ovate-lanceolate, prominently 3 nerved, 6 cm long, 16-19 mm wide at the widest point, with entire (not even mucronulate), slightly revolute, sparsely ciliate margins, very sparsely puberulous beneath with minute, reddish, viscidulous hairs, glabrate and shiny above. Heads staminate (flowers with abortive ovaries); corollas tubular, with lobes cut halfway to the base of the limb.

Although the label indicates that the plant was collected in Panamá, it is not one of the known species of *Baccharis* or *Archibaccharis* from México or Central America. Since *Archibaccharis* has not been found in South America, the specimen probably represents a species of *Baccharis* from South America, although we have not been able to match it with any species. Further, the alleged collector, Humboldt, did not leave South America for México until February 1803, and he apparently made no stops in Central America.

7. *Aster asperrimus* Less., *Linnaea* 5:142. 1830. TYPE: MÉXICO. [Veracruz]: in dumetis apricis prope La Hacienda de la Laguna, Sep [1828], C.J.W. Schiede 305 (Probable HOLOTYPE: B, tracing by JMG and fragment GH!). *Solidago altissima* L.
8. *Aster scaberrimus* Less., *Linnaea* 5:143. 1830. TYPE: MÉXICO. Veracruz: in sylvaticis prope Jalapam, [28] Aug [1828], C.J.W. Schiede 308 (HOLOTYPE: B, tracing by JMG and fragment GH!; Isotype: HAL!). *Erigeron scaberrimus* (Less.) Nesom, *Sida* 11:250. 1985; not Gardner, 1848. *Erigeron veracruzensis* Nesom, *Phytologia* 67:74. 1989 (*nom. nov.*, based on Schiede 308).

Erigeron longipes DC. (including *E. affine* DC. and *E. scaposus* DC.) was cited by Nesom & Sundberg (1985) as a synonym of *E. veracruzensis*, but the latter, which has noncoiling rays and a branched capitulescence, is a different species.

9. *Erigeron socorrensis* Brandegee, *Erythea* 7:4. 1899. LECTOTYPE (designated here): MÉXICO. [Colima]: Socorro Island, Mar-Jun 1897, A.W. Anthony 376 (UC!; Isolectotypes: DS-2 sheets!, GH! UC!, US-3 sheets!).

Brandegee cited only the single collection but did not specify the herbarium where it was deposited.

In the following instances (10-15), lectotypes are designated where J.M. Greenman cited two specimens of a single collection from different herbaria without specifying a holotype. Greenman was working at the time from GH, and we have selected these sheets as the lectotypes.

10. *Erigeron oaxacanus* Greenman, *Proc. Amer. Acad. Arts* 41:257. 1905. LECTOTYPE (designated here): MÉXICO. Oaxaca: near San Mateo del Mar, 16 May 1895, E.W. Nelson 2606 (GH!; Isolectotype: US!).
11. *Erigeron irazuensis* Greenman, *Proc. Amer. Acad. Arts* 40:36. 1904. LECTOTYPE (designated here): COSTA RICA. La Playita, Volcán Irazu, endroits humides, 3300 m, 31 Jan 1900, H. Pittier 14075 (GH!; Isolectotype: CR ["hb. Physico-Geogr. Cost. Ri." as cited by Greenman]).
12. *Achaetogeron griseus* Greenman, *Proc. Amer. Acad. Arts* 41:254. 1905. LECTOTYPE (designated here): MÉXICO. Durango: vicinity of the city of Durango, Apr-Nov 1896, E. Palmer 821 (GH; Isolectotypes: UC!, US!). *Erigeron griseus* (Greenman) Nesom, *Sida* 9:224. 1982.
13. *Achaetogeron purpurascens* Greenman, *Proc. Amer. Acad. Arts* 39:94. 1903. LECTOTYPE (designated here): MÉXICO. Chihuahua: near Colonia Garcia, 8000 ft, 27 Jul 1899, C.H.T. Townsend & C.M. Barber 175 (GH!; Isolectotypes: MICH!, NY!, PH!, UC!, UNM-2 sheets!, US-2 sheets!). *Erigeron wislizeni* (A. Gray) E. Greene subsp. *purpurascens* (Greenman) Nesom, *Sida* 9:225. 1982. *Erigeron wislizeni* (A. Gray) E. Greene.

These purple rayed plants are now regarded as only a color form of the species, without formal taxonomic recognition (Turner & Nesom, in prep.).

14. *Erigeron oreophilus* Greenman forma *tenuilobus* Greenman, Proc. Amer. Acad. Arts 41:258. 1905. LECTOTYPE (designated here): MÉXICO. Sinaloa: Sierra de Choix, 15 Oct 1898, *E.A. Goldman 255* (GH!; Isolectotype: US!). *Erigeron oreophilus* Greenman.

No infraspecific taxa are recognized within *Erigeron oreophilus* (Nesom 1989).

15. *Erigeron oreophilus* Greenman forma *latilobus* Greenman, Proc. Amer. Acad. Arts 41:258. 1905. LECTOTYPE (designated here): MÉXICO. Chihuahua: base of Mt. Mohinora, 12.8 km from Guadalupe y Calvo, 7000-7500 ft, 23-31 Aug 1898, *E.W. Nelson 4861* (GH!; Isolectotype: US!). *Erigeron oreophilus* Greenman.

ACKNOWLEDGMENTS

We thank Dr. B.L. Turner and Dr. Gustavo A. Romero for their review and comments on the manuscript and Dr. Elizabeth Shaw for information on William Harvey and Thomas Coulter, and for pointing out the Ducker publication.

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A REEVALUATION OF THE GENUS *ALEPIDOCLINE* (ASTERACEAE,
HELIANTHEAE, GALINSOGINAE) AND DESCRIPTION OF A NEW SPECIES
FROM OAXACA, MÉXICO

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ABSTRACT

Alepidocline S.F. Blake is accepted as a valid genus with four species. It is related to *Galinsoga* and *Sabazia* but is amply distinct by a syndrome of characters and appears to be a monophyletic assemblage of four annual species which are distributed from Oaxaca, México, through Central America to Venezuela. A new species, *Alepidocline macdonaldana*, from Oaxaca, is described and illustrated, and two new combinations are made, *Alepidocline breedlovei* and *Alepidocline trifida*.

KEY WORDS: Asteraceae, Heliantheae, *Alepidocline*, *Galinsoga*, *Sabazia*, México

Description of *Alepidocline macdonaldana* in the account that follows has necessitated a reevaluation of the generic limits of *Sabazia*, *Galinsoga*, and related cohorts. As noted by Turner (1976) in his discussion of the submergence of *Alepidocline annua* S.F. Blake into an expanded *Sabazia*, Blake was unaware of the phyletic position of *Alepidocline* in the tribe Heliantheae, relating this to *Schistocarpha*. At least he did not suggest a relationship to *Sabazia* or *Galinsoga*. Robinson & Brettell (1973) also considered the relationships of *Alepidocline* to be with *Schistocarpha*, but clearly noted its relationship to the subtribe Galinsoginae. Robinson (1979), with his description of *Galinsoga macrocephala* H. Robins. (= *Alepidocline annua* S.F. Blake), has added additional views on the relationship of *Alepidocline*. Unaware of the synonymy of *Galinsoga macrocephala* with *Alepidocline annua*, he placed the species in an expanded *Galinsoga*, noting that the species was "unique in the genus by the comparatively large size of the heads . . . and that the peripheral paleae do not form complexes with the inner involucre bracts as in typical *Galinsoga*." Robinson (1975) also noted that the readily deciduous setiform pappus of "*G*."

macrocephala" (= *Alepidocline annua*) differs from the forms traditionally placed in *Galinsoga*, but that "a similar form is found in one Mexican species, *G. formosa* Canne (= *Sabazia trifida* Fay) included in [*Galinsoga*] by Canne (1977)." However, Robinson (1981), subsequently accepted *Alepidocline* as a valid genus without comment, although, as noted in the above, he positioned the generitype within an expanded *Galinsoga*.

In my forthcoming treatment of *Galinsoga* and *Sabazia* for the Asteraceae of México (Turner & Nesom, in prep.) I originally intended to position both *Alepidocline annua* and *Galinsoga formosa* Canne (= *Sabazia trifida* Fay) in *Sabazia*, retaining *Galinsoga* in the classical sense (a group of short rayed annuals having a persistent pappus (when present), and the familiar achenial complex involving the inner bracts and outer pales. Discovery of the present species has occasioned my reexamination of the entire complex, including *Alloispermum*, which is the oldest generic name for the genera under discussion, were all of these to be combined into a single genus. A legitimate case might be made for this, for all of these taxa have base chromosome numbers of $x = 8$ (if not 4) and all possess a syndrome of characters that suggest a common origin.

In my restudy of the several genera involved, I conclude that *Alepidocline* is a distinct phylad, readily distinguished from *Alloispermum*, *Galinsoga*, and *Sabazia* by several characters, the most notable being 1) the disk corollas, which possess tubes equal to or up to four times as long as the limbs; 2) the achenes, which possess small "buttonlike" carpophodia on the ventral sides of obovoid striatulate achenes; 3) pales completely deciduous from the receptacle (with the notable exception of *A. trifida*); 4) 8-10 linear pappus scales which are detached from minute sockets of the achene at the slightest touch. Taken together, these provide ample evidence that *Alepidocline* is a closely knit phyletic group with perhaps only remote relationships to *Sabazia*. Within *Alepidocline* as constructed here, *A. trifida* approaches *Galinsoga* in possessing well defined, 3 cleft, persistent pales, but most of the other characters listed for *Alepidocline* are found in the species concerned.

In view of the above account, I feel compelled, however reluctantly, to resurrect *Alepidocline*. As reconstructed, *Alepidocline* contains four species, readily identified by the following key:

1. Ultimate peduncles of heads mostly 0.1-1.0 cm long; Oaxaca
 *A. macdonaldana*
- 1' Ultimate peduncles of heads mostly 1-6 cm long (2)
2. Ligules of ray florets 1-2 mm long *A. annua*
- 2' Ligules of ray florets 10-20 mm long (3)
3. Involucres campanulate, the bracts graduate *A. breedlovei*

3' Involucres hemispheric, the bracts subequal *A. trifida*

Alepidocline annua S.F. Blake, J. Washington Acad. Sci. 34:441. 1984.

Sabazia annua (S.F. Blake) B. Turner.

Galinsoga macrocephala H. Robins.

This species is apparently a locally common, cornfield weed in Guatemala (Nash 1976). Its recent discovery in Venezuela by H. Robinson (described as *Galinsoga macrocephala*), is perhaps a recent introduction; it is almost certainly native to Chiapas, México, however, for it reportedly occurs there in evergreen pine-oak-fir cloud forests.

Alepidocline breedlovei (B. Turner) B. Turner, *comb. nov.* BASIONYM:

Sabazia breedlovei B. Turner, *Wrightia* 5:303. 1976.

This taxon is clearly closely related to *Alepidocline annua* but is more robust with larger heads and much longer rays.

Alepidocline macdonaldana B. Turner, *sp. nov.* (Figure 1). TYPE: MÉXICO. Oaxaca: 35 km ESE of Miahuatlán, 5-10 km NE of Santo Domingo Ozolotepec, Cerro Quiexobra (ca. 16° 10' N, 96° 15' W), common in moist subalpine meadows in mountain saddles, 3500-3600 m, 3 Oct 1990, *Andrew McDonald 3009* (HOLOTYPE: TEX; Isotype: MEXU).

Herbae annuae tenellae 3-15 cm altae; folia 10-15 mm longa, 5-10 mm lata, petiolis 1-2 mm longis laminis ovatis vel ovati-ellipticis; capitula 1-3 ad nodum, plerumque sessilia in axillis foliorum; involucria campanulata, bracteis 2-3-seriatis subaequalibus; flosculi radii ca. 3; flosculi disci 12-20; achenia obovoidea glabra, pappo squamarum linearium deciduorum ca. 8.

Delicate erect herbs 3-15 cm high. Stems slender, branched from the base, pilosiusculus with multiseptate hairs. Leaves opposite, 10-15 mm long, 5-10 mm wide; petioles winged, mostly 1-2 mm long; blades ovate to ovate elliptic, pubescent above and below with appressed hairs, the margins denticulate. Heads 1-3, mostly sessile and surpassed by the subtending leaves, rarely on peduncles to 1 cm long. Involucres campanulate, 4-6 mm high, 4-5 mm wide, the bracts 2-3 seriate, subequal, scarious, 2-3 mm wide, 5-8 striate, the apices obtuse or rounded. Receptacle broadly conical, 2-3 mm high, ca. 1.5 mm wide, glabrous, chaffy, the pales mostly linear, unistriate, ciliate, all of them readily deciduous with age, not at all persistent. Ray florets ca. 3 per head, pistillate, fertile, the corolla tubes 1-2 mm long, the ligules yellow, 0.1-0.5 mm long. Disk florets 12-20, the corollas yellow, sparsely pubescent, 1.5-2.0 mm long,

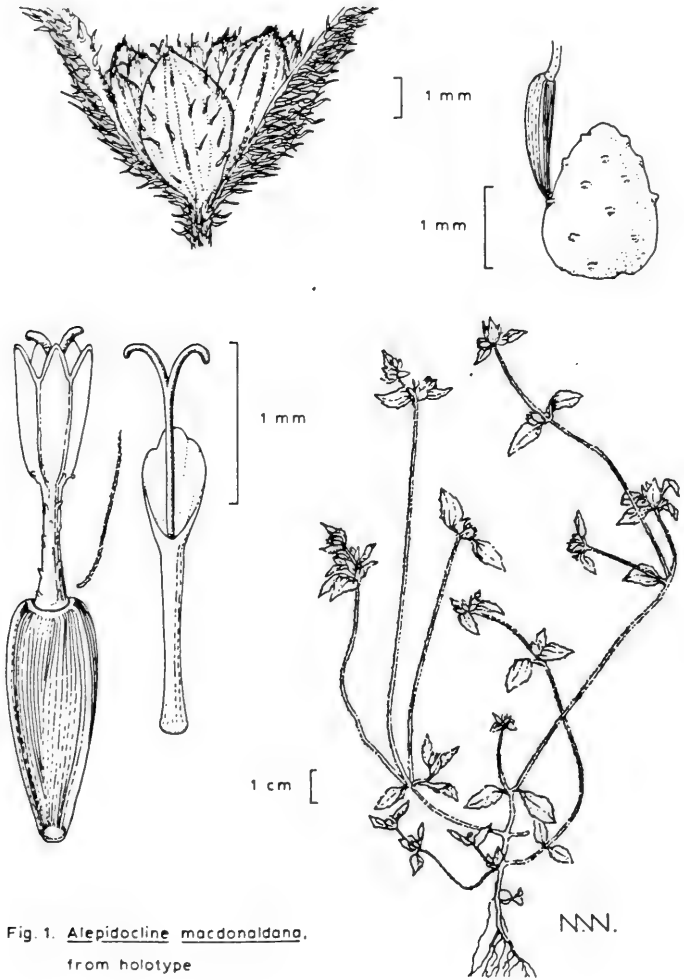


Fig. 1. *Alepidocline macdonaldana*,
from holotype

the tube ca. as long as the limb, the lobes (3)4-5, ca. 0.3 mm long. Achenes black, substriatulate, glabrous, obovoid or clavate with rounded shoulders, those of the ray and outer disk florets having small buttonlike carpopodia on the adaxial side, the pappus of ca. 8 linear pappus scales which dehisce at the slightest touch.

This very distinctive species superficially resembles *Galinsoga subdiscoidea* Cronquist of northwestern México, but in details of the receptacle, corolla, and achenes, especially the pappus, it clearly belongs to *Alepidocline*.

Alepidocline trifida (Fay) B. Turner, *comb. nov.* BASIONYM: *Sabazia trifida* Fay, Brittonia 25:197. 1973. *Galinsoga formosa* Canne (not *Galinsoga trifida* Pers., 1807).

This species is known only from the type collection (ca. 125 km S of Cd. Oaxaca, Oaxaca, México). It apparently stands somewhere between the classically conceived *Galinsoga*, *Sabazia*, and *Alepidocline*, but closer, I think, to the latter genus. The character that best links the four species is that of the pappus, for all have very delicate linear-lanceolate pappus scales that are attached to a circle of minute sockets, hence the derivation of the generic name *Alepidocline* (a combination of the Greek words for bed and scale), according to Blake.

ACKNOWLEDGMENTS

I am grateful to Guy Nesom for the Latin diagnosis and to him and Linda Escobar for reviewing the manuscript. Nancy Webber provided the illustration.

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THE DISTRIBUTION OF *BARTONIA* (GENTIANACEAE) IN LOUISIANA

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ABSTRACT

We describe the distribution of *Bartonia* in Louisiana. *Bartonia verna* (Michaux) Raf. *ex* Barton is confined to southeastern Louisiana, *B. paniculata* (Michaux) Muhl. occurs in southeastern and in northern Louisiana, and *B. virginica* (L.) BSP occurs in three locations, two of which extend the described range of this species.

KEY WORDS: *Bartonia*, Gentianaceae, Louisiana

As part of a continuing study of Louisiana pitcher plant bogs, we discovered that the distribution of *Bartonia*, a frequent member of the bog community (MacRoberts & MacRoberts 1990), is incorrectly described in the Louisiana botanical literature (see MacRoberts 1989 for a summary of current information on the distribution of this genus in Louisiana). Consequently, we examined all *Bartonia* specimens from the major Louisiana herbaria (LSU, LAF, USLH, NLU, NATC, NOLS, NO, LTU, LSUS, Centenary College). We studied the descriptions and keys in all southeastern floras that include *Bartonia* and ultimately settled on Gillett's (1959) and Correll & Johnston's (1970) descriptions since most of the others are derivatives of these two. The same characters are used by all authors: leaf placement, petal size and shape, and flowering season. Knowing that Edwin Bridges and Steve Orzell had done extensive work on the flora of southwest Louisiana and southeast Texas, we sent them an earlier version of this paper. Steve Orzell replied with information on *Bartonia*, which he has given us permission to incorporate here.

Bartonia verna (Michaux) Raf. *ex* Barton.

We examined 29 herbarium sheets of this taxon from Louisiana. MacRoberts (1989) and Craig, *et al.* (1987) report it from St. Tammany Parish only. Gillett (1959) reports it from Tangipahoa and Orleans parishes but gives no voucher specimens. Among the sheets we examined, we found one from Tangipahoa Parish (Brown 1608 [LSU]) and 28 from St. Tammany Parish

(e.g., *Givens 2534* [LSU]) (Figure 1). The taxon has also been reported from hillside seepage bog habitat in southeast (Tyler Co.) Texas (Correll & Johnston 1970; Ajilvsgi 1979; Bridges & Orzell pers. comm.), but not as yet from southwest Louisiana where suitable habitat occurs (Bridges & Orzell 1989).

Bartonia texana Correll.

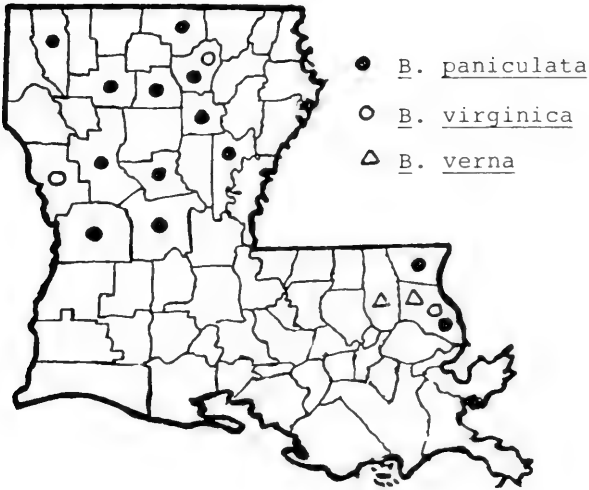
We were especially interested in locating, if possible, any Louisiana examples of this Texas endemic (Correll 1966; Nixon & Ward 1981; but see Wood & Weaver 1982:479). We found no specimens that could be assigned to this taxon, but certainly do not consider this unexpected since the plant is an inconspicuous, late autumn blooming plant that has not been subject to any field searches. Since little is known about this species, we give the following information from Bridges & Orzell (pers. comm.):

Bartonia texana is endemic to semi-evergreen broadleaf acid seep forests (SEBASF) in southeast Texas, and possibly, Louisiana. We have collections from five counties in southeast Texas. *Bartonia texana* consistently occurs in these seep forests downslope from the calcareous Fleming Formation (formation also in western Louisiana). Our collections of *B. texana* are from SEBASF where there apparently is some influence on the groundwater seepage from the Fleming Formation. It is absent from similar SEBASF in which the seepage is derived solely from deep sandy formations (i.e., Willis, Catahoula, etc.) which lack some interface with the Fleming Formation. Suitable habitat exists in adjacent southwest Louisiana and it should be sought in SEBASFs proximal to the Fleming Formation.

Bartonia paniculata (Michaux) Muhl.

MacRoberts (1989) could find no parish record of *Bartonia paniculata* in the Louisiana botanical literature, even though this species should be common, as it occurs in all surrounding states (Gillett 1959; Wood & Weaver 1982; Correll & Johnston 1970; Taylor & Taylor 1989; Steyermark 1963; Smith 1988). We located 37 herbarium sheets of this taxon, most of which had been misidentified as *B. virginica*. *Bartonia paniculata* is widely distributed in the state, and its seeming absence from south central and southwest Louisiana is probably an effect of failure to collect this area adequately, especially in the late autumn (Figure 1). Representative specimens are: St. Tammany Parish, *Givens 5000* (LSU); Natchitoches Parish, *MacRoberts & MacRoberts 900* (LSUS); Vernon Parish, *Thomas 74025* (NLU).

Figure 1. Distribution of Bartonia.



Bartonia virginica (L.) BSP.

This species has been reported from numerous locations in Louisiana (MacRoberts 1989), even though Gillett (1959) reports it only for southeastern Louisiana, Wood & Weaver (1982) report it as occurring in "southern" Louisiana, and no one reports it in the states north or west of Louisiana (Correll & Johnston 1970; Taylor & Taylor 1989; Smith 1988; Bridges & Orzell pers. comm.). We located fourteen herbarium sheets of this taxon that place it in three widely separated parishes (Figure 1). Two of these records extend the known range of *Bartonia virginica* considerably westward. Representative specimens are: Ouachita Parish, *Thomas 3862*, *Thomas 11012* (NLU); St. Tammany Parish, *Allen 9305* (NLU); and Sabine Parish, *Brown 6111* (LSU).

ACKNOWLEDGMENTS

The curators and staff of all herbaria who sent specimens and information are gratefully acknowledged. Florence Givens was especially helpful regarding one problematic specimen. D.T. MacRoberts, R. Dale Thomas, and Steve Orzell commented on the manuscript, and we wish to thank Steve Orzell and Edwin Bridges for allowing us to use their unpublished information. The continuing cooperation and assistance of the staff of the Kisatchie National Forest has been instrumental in making this study, as in all our bog work, possible.

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BOOK REVIEWS

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A Manual of Alpine and Rock Garden Plants. Christopher Grey-Wilson (ed.). Rock Gardener's Library. Timber Press, 9999 S.W. Wilshire, Portland, OR 97225, USA. 1989, x, 278 pp., \$29.95 hardcover (+ \$3.00 shipping). ISBN 0-88192-146-7.

This volume presents information on a selected set of plants commonly grown in alpine or rock gardens. Introductory pages include a description of what an alpine or rock garden consists of, general information on how to construct such a garden (in areas that are neither alpine nor rocky), care of plants in alpine or rock gardens, propagation of plants, and sources of garden material. An important caveat indicating that garden enthusiasts should not dig their specimens from the wild is also included.

All plants included in the book are said to be available from specialist nurseries and catalogues. The bulk of the text is an alphabetical (by genus) listing of suitable alpine plants. Listings of species within each genus are ordered according to similarities. A handy system of symbols is used to convey information on amount of sun necessary, soil pH required, and difficulty to maintain in an artificial garden.

Each generic listing in the book is accompanied by a brief description of members of the genus, size and geographic distribution of the genus, and general information on propagation of members of the genus. Individual species listings consist of symbolic representations of growth parameters, brief descriptions of the plant, geographical range, flowering times, natural habitat, and often, information on cultivation of the particular species.

Sources for the information included in the species listings are not given. Apparently some of the information comes from the catalogues from which material of the plants may be purchased. This source is suggested by the inaccuracy of some of the information, particularly that regarding geographical ranges. For instance, the listing for *Delphinium* includes *D. menziesii*, purportedly from "NE North America." This species is actually found in NW United States and extreme SW Canada. In addition, *D. nudicaule* is listed as

occurring in "mountains of W North America," which suggests a much more widespread range than its actual distribution within California and extreme S Oregon.

Much of the information on cultivation of the species included pertains to cultivation of the plants in the climate of NW Europe. However, many of the same cultivation methods should also apply in most cool temperate climates around the world.

Several color plates are included in the book. Only a small number of species are illustrated, but the photographs are superb. The book is aimed at the beginning alpine gardener, but seems to have enough information to be useful as well to experienced gardeners. The volume certainly achieves its goal to be useful for a beginning alpine or rock gardener.

Carnivorous Plants of Australia, volume 1. Allen Lowrie. University of Western Australia Press, Nedlands, Western Australia, AUSTRALIA. 1987, xxv, 200 pp., \$27.50 (paper), \$38.50 (cloth), plus postage (surface) outside Australia \$9.50, all prices in Australian dollars. ISBN 0-85564-254-8. Copies available from: Allen Lowrie, 6 Glenn Place, Duncraig, 6023, Western Australia, AUSTRALIA.

Carnivorous Plants of Australia, volume 2. Allen Lowrie. University of Western Australia Press, Nedlands, Western Australia, AUSTRALIA. 1989, xxxvii, 202 pp., \$27.50 (paper), \$38.50 (cloth), plus postage (surface) outside Australia \$9.50, all prices in Australian dollars. ISBN 0-85564-300-5. Copies available from: Allen Lowrie, 6 Glenn Place, Duncraig, 6023, Western Australia, AUSTRALIA.

These are the first two volumes of a three volume series on the insectivorous plants of Australia. Volume three is due in 1991. Species of *Drosera* fill the first two volumes of this series. Volume one treats the tuberous species of *Drosera* (sections *Ergaleium* Planchon, *Erythrorhiza* (Planchon) Diels, and *Stolonifera* DeBuhr). Volume two covers sections *Coelophylla* Planchon, *Lamprolepis* Planchon, *Rorella* DC., *Stelogyne* Diels, and an additional three taxa of section *Ergaleium* that were not included in volume one.

Each volume begins with rather lengthy prefatory material (25 pp. in volume one and 37 pp. in volume 2). My own preference would have been to include most of these pages as part of the main body of the text, but how the pages are numbered does not really affect the quality of the books.

The introductory material includes a three page glossary in each volume, and a drawing or drawings illustrating the general morphological features of a *Drosera* plant. The author has done his own artwork on these drawings (and those throughout the books) and the drawings are quite useful. Nearly all of the drawings to show features of a particular species include a drawing of the habitat as well as more detailed drawings of other structures (petals, seeds, ovaries, styles, etc.).

Volume one has a section devoted to use of the keys, followed by a key to "groups" of *Drosera* treated in volume one. The groups essentially correspond to nomenclatural sections. No key to groups is found in volume two. However, nearly all of the species in volume two are referred to section *Lamprolepis*. Both volumes have a summary, by "groups," of the morphological features of members of the group, and a listing of the species shown in the following pages, with the page number on which to find the description of any treated species. Keys to species follow the tabular listing of members of each group. The species key concludes (at least in terms of page numbers) the prefatory material in volume one.

Prefatory material in volume two continues with a discussion of *Drosera* gemmae. The discussion of gemmae includes descriptions, drawings of gem-

mae, and seven numbered "sections" (not appearing to correlate with nomenclatural sections) based on features of the gemmae.

The main body of text for volume one begins with a brief description of carnivorous plants in general, and *Drosera* in particular. Following this is a map of Western Australia (showing some major physiographic provinces), a description of dormancy and growth in *Drosera*, a more complete description of the "groups," and a summary of flowering in *Drosera*.

The main body of text in volume two begins with an introduction as to how to identify a pygmy *Drosera*, followed by a description of the life cycle of a pygmy *Drosera*, and a description of the habitats where one might find pygmy *Drosera*. The discussion of habitats includes photographs of four habitats, and a political map of Australia. A brief summary of some of the difficulties and history of Australian *Drosera* taxonomy, and a discussion of natural hybrids nearly completes the main introductory material from volume 2. Introductory material in both volumes concludes with a summary of methods used to produce the taxonomic descriptions that follow.

Each taxon treated is allotted a four page space in the books. The first page of each taxon treatment includes a written description of the plant. These descriptions parallel one another almost to a fault, allowing easy comparison of features between taxa. The second page is devoted to a drawing of features of the plant. Page three in each description includes a map of the geographic distribution of the plant. The finest part of each taxon treatment is on the fourth page. These (the fourth) pages of each discussion are devoted to color photographs of the plants. Most often, these plates include one or more habit frames in addition to one or more closeup views of particular features of the plants. The quality of the photography and reproduction are excellent. Many of the pictures are simply fabulous. To a worker familiar only with the tiny, white or pink (rarely purple) flowered species of *Drosera* in North America, the bright yellow, orange, and maroon flowers of some of the Australian species are quite different. More surprising yet was to see photographs of *Drosera*, depicting plants more than a meter tall and with petals more than a centimeter long. The photographs alone make the books worthwhile.

Having elucidated many of the positive features of these two books, I feel compelled to point out some negative features as well. These items are mainly of concern only to a professional taxonomist, but they bear mentioning. The major taxonomic shortcoming of these two volumes is the inclusion in them of several taxa which are not yet (or at least were not when the book was published) validly published. Thirteen of the taxa in volume one fall into this category, and a much larger number in volume two are not yet validly published. These taxa have been included in the books (apparently under consultation with another author) with Latin names.

Although the descriptions, drawings, and photographs of these species may leave little doubt that they are distinct species and what their distinguishing

features are, they remain unpublished in a nomenclatural sense because no type specimens have been designated and no Latin descriptions have been provided. Even though these events cause problems for a professional taxonomist, such an individual should be adequately equipped to decipher them. However, for a non taxonomist, the risk (and it becomes greater, the longer these taxa remain officially unnamed) is that these same taxa will be described by other individuals under different Latin names, thus causing tremendous confusion when one individual wishes to communicate with another about a particular species.

In the future, the author of the present two volumes might be well advised not to include Latin names of plants not yet validly published, or make arrangements to complete valid publication in his own works (as could easily have been done in the case of these two volumes).

Another minus is the fact that five taxa are included in volume two that are not included in the keys to species in either volume. These include *Drosera glanduligera* Lehm., *D. hamiltonii* Andrews, and three more taxa listed on page xvii of volume two that are not yet validly published. A worker who has specimens of one of these plants will not be able to identify them with the present keys, even though the plants are included in the book. A comprehensive key to all "groups" included in the series would also be helpful. Maybe this will appear in volume three.

In total, the two volumes of *Carnivorous Plants of Australia* are valuable books, written by a person who is obviously very knowledgeable and excited about, interested in, and (apparently sometimes) a little overzealous about the plants. The present two volumes are an impressive effort and worth the purchase price. They will be valuable sources of information for anyone interested in *Drosera*, whether it be from a taxonomic or horticultural point of view.

Himalayas. Blanche C. Olschak, Augusto Gansser, & Emil M. Bühner. Facts on File, Inc., 460 Park Avenue South, New York, NY 10016, USA. 1988, 288 pp., \$40.00, cloth. ISBN 0-8160-1994-0.

This book contains beautiful photographs of one of the areas of the world least visited by Westerners. The quality of the photography is excellent, and the views breathtaking in many of the more than 300 photographs. Relatively little prose is found in the book (little is necessary).

The writing that is present is descriptive in nature and deals more with the peoples of the region and some of their philosophies of life, than the physical features of the mountains themselves (although the photographs are primarily of physical features rather than people). Photographs of the human population feature persons in costumes typical of the region. Captions for the photographs are probably the most important part of the written text.

A map is found in the early pages of the book to allow a reader to orient within the region. Some geological history of the area is presented both in the form of text and drawings. A brief history of (European) exploration of the region is also included.

While this book has little to directly assist the work of a practicing biologist, it may still be useful in providing a diversion and stimulation for the mind in preparation for more professional pursuits. In any case, the book will be of interest to anyone who has ever had a desire to visit this part of the world, and would make a good showpiece for those who have visited, to show their friends some of what is found in the Himalaya. In short, this is a book that would make a good coffee table piece.

Manual of the Flowering Plants of Hawai'i. volumes I & II. Warren L. Wagner, Derral R. Herbst & S.H. Sohmer. University of Hawai'i Press, Order Department. 2840 Kolowalu St., Honolulu, HI 96822, U.S.A. 1990, xviii, 1851 pp., (xviii, pp. 1-988 [volume I], vi, pp. 989-1851 (volume II)), \$85.00 (2 volume set), hardcover. ISBN 0-8248-1152-6.

Without a comprehensive treatment of the flora of the Hawaiian Islands for over 100 years, the present work is long overdue and will be a very important tool for years to come for botanists studying floristic and biogeographic questions involving these islands. The authors of this two volume set are to be commended on the production of a significant contribution to the understanding of an extremely interesting flora. They have produced a thorough summary of the status (taxonomic, ecological, historical, etc.) of the plants native to and naturalized in the Hawaiian Islands.

Each family and genus treatment includes a general morphological description of the taxon, literature citations of studies on Hawaiian members of the group, a summary of the worldwide size and distribution of the taxon, Hawaiian distribution and number of subordinate taxa, and special information about the taxon. The special information sections may include hypotheses on the introduction (natural or human) of the group to the islands, chromosome numbers, mention of studies in progress, enumeration of areas where further study is needed, unique relationships of plants with their pollinators, and additional information seldom found in floristic treatments. Nearly all genera are illustrated by a drawing of at least one species. Organization of the treatments is alphabetical by species within genera, genera within families, and families within subclasses. Dicotyledons are treated first, followed by monocotyledons.

These two volumes comprise a treatment somewhat larger than might be expected for a flora of slightly over 1800 species. The large size of the final publication is due to the extensive treatment given each species (most species treatments are more than 1/4 page long, with many greater than 1/2 page). Species treatments include descriptions, synonymy, vernacular names (English and Hawaiian), notations of whether the species is native, endemic or naturalized, endangered or threatened status, distribution (geographical and ecological) information, and (for many) additional information about the plant. The additional information may include such items as chromosome numbers, relationships with other species (plants and animals), evolutionary history (including hypothesized introductions of ancestors), hybridizations, economic uses, protective measures taken or needed, etc. Most of the "additional information" is material not normally found in floristic works. The tremendous amount of information included in this publication makes the rather large size of the work entirely justified. Unfortunately, the large size of the publication precludes convenient use of the work as a field companion.

Keys appear to be straightforward and usable. Many of the leads (especially in keys to higher taxa) are quite lengthy. This should make them useful for specimens in many different growth phases. One point that I feel detracts from the work is the construction of the keys. All leads of all couplets begin at the left margin of the page. While this is not a problem for the actual functioning of the key, it seems to me harder on the eyes as one matches up leads to use the key. On the other hand, the practice of including a citation with each couplet, of the couplet used to reach a given point in the key is quite useful and one that I wish were more commonly used in floristic works.

An extensive and very useful glossary is present. Many of the terms are illustrated, but the illustrations are on separate pages and no reference is found with the terms to indicate which are illustrated and which are not.

The first 125 pages of the first volume are devoted to introductory material. These pages summarize the history of the project, concepts and methods used to develop the project, and more importantly, descriptions of the geology, climate, vegetation, and important collections in the Hawaiian Islands. Each of these sections provides essential information for understanding certain aspects of the taxonomic treatments.

On the whole, Wagner, Herbst, and Sohmer have produced a valuable resource for the study of the flora of the Hawaiian Islands, and the work should be useful for many years to come. The two volumes are available at a very reasonable cost and I recommend them to any person interested in the flora of this island chain.

Sonoran Desert Summer. John Alcock. Arizona University Press, 1230 N. Park Avenue, Suite 102, Tucson, AZ 85719-4140. USA. 1990, x, 188 pp., \$19.95, cloth. ISBN 0-8165-1150-0.

Sonoran Desert Summer is a fascinating book that describes just what the title implies, summer in that part of the southwest United States and northwest México, known as the Sonoran Desert. The book is not a simple descriptive compendium of facts and figures of climate, flora, and fauna. Instead the text is an intricately woven web of factual transmission, mystery, intrigue, and humor. Alcock has skillfully taken information collected over many years of field study by himself and other workers, and has presented the information in such a manner as to make it intelligible and informative to a general reader.

The book is a laudable bridge between scientists and laypersons, being a good effort at organismic science for nonmajors (whether it was intended to be or not). On the other hand, the work is interesting and accurate enough to be enjoyable for biologists. Each chapter comprises a vignette portraying discrete episodes of life (for instance, flash floods, hummingbird territorial disputes, cooperation among Harris' hawks, plumage similarities between Zone Tailed Hawks and Turkey Vultures, and variable food sources for the Phainopepla) in the desert summer. The narrative of the chapter not only provides a description for the events taking place, but an interpretation of what the events mean (for the organisms and the desert itself) in an ecological and evolutionary context.

The chapters of the book are organized into a semichronological sequence beginning with the month of May and leading through the summer into September. The changes taking place in the desert with increasing heat as the days pass early in the summer, followed by midsummer monsoons, and later, the decline of the monsoonal moisture are all described in the book. Each of these seasons within the summer season in the desert brings changes to the desert and the life found there. Most of the featured organisms in the chapters of the book are animals (as Alcock does most of his research on them), but the saguaro is a pivotal subject in many chapters of the work. In fact, several chapters are devoted to events taking place in and around a dead saguaro described in the initial chapter.

Many of the chapters are illustrated by line drawings. These help readers unfamiliar with the desert to visualize the scenes being described in the text. The book is filled with bits of information, many of which a reader can readily verify on his or her own visit to the Sonoran Desert. Overall, this would be an excellent book for any person with an interest in life in the desert who wishes to gain a greater insight into the marvels of that ecological zone.

The Identification of Flowering Plant Families, Third Edition. P.H. Davis & J. Cullen (Third Edition revised and edited by J. Cullen). Cambridge University Press, 32 East 57th Street, New York, NY 10022, USA. 1989, x, 133 pp., \$29.95, hardcover. ISBN 0-521-37335-2.

This handy reference book is useful for preliminary identification (to family level) of plants growing in North Temperate regions of the world. The authors have written keys to identify specimens of nearly all angiosperms found growing north of 30° N latitude. This area includes Europe, most of North America, part of northern Africa, and most of Asia.

Significant portions of the northern continents not included in the scope of this book are most of Florida, southern Texas, southern China, nearly all of India, and the southern portions of the Middle Eastern region. However, many of the plant families native to these regions and not to the area covered by the book, are included in the book if representatives of them are cultivated and successfully reproducing without shelter in the Northern Hemisphere. Therefore, the only families not represented in the book are those that are exclusively subtropical, tropical, or Southern Hemisphere, and without cultivated representatives in the Northern Hemisphere. Most (257 with an additional 28 segregates from several of the larger families) flowering plant families are thus included.

The organization of the family descriptions follows the Engler-Prantl system. Keys themselves are strictly dichotomous and for the most part, relatively easy to use. Family descriptions are brief but reasonably comprehensive, including morphological features and some indication of geographical range of the family. Ordinal descriptions are typically a single text line of morphological features. In addition to the keys, the book has some introductory information on the use of terms, features of a plant, use of identification keys, and a section to provide information for users of the book who wish to further identify their specimens. An annotated bibliography is included with the section on further identification of specimens.

The book is of a size convenient for field use, and the construction of the book itself should withstand at least limited field use.

The Vascular Flora of Isla Socorro, Mexico. Geoffrey A. Levin & Reid Moran. Memoir 16. San Diego Society of Natural History, P.O. Box 1390. San Diego, CA 92112. USA. 1989. 71 pp., \$11.00 (– \$1.50 shipping), paper. No ISBN or ISSN.

Levin and Moran's book provides a modern summary of the flora of a group of islands that has figured prominently in many past biogeographic studies. Due to the fact that they are oceanic islands, data from the Revillagigedo Islands (of which Isla Socorro is the largest island) are often cited to support theories of island biogeography. The authors provide an introduction including a brief description of climate and topography of Isla Socorro, human impacts on flora of the island, historical accounts of previous botanical collectors, description of vegetation types, and a biogeographic summary of the flora. A total of 117 native species are included in the flora. Another 47 species have been introduced and have become naturalized. Six new taxa are described and and additional six new combinations made. The descriptions and nomenclatural transfers are included in the text. Each of the new taxa is illustrated. Four taxa could not be identified beyond the genus level (one each in *Opuntia*, *Passiflora*, *Psidium*, and *Rubus*). Some of these may represent new taxa.

The body of the work is the catalogue of species. The assumption (probably valid for most users) is made by the authors that users of the treatment will know the difference between ferns, dicotyledons, and monocotyledons, as no key appears to differentiate between these groups. Keys to families are found for families within each of these three major categories. The keys throughout the book are indented, and although I have no plants from the islands on which to test the keys, they appear to be direct and easy to use. Keys to members of families are not present for most families, as most families are represented on the islands by only a single species. For better represented families, keys within the family lead directly to species identification. Species treatments generally include distribution of the species on the island, distribution elsewhere (if not endemic to Socorro), distribution of closest relative of endemic species, and remarks about the plant. Remarks may include historical records of the plant, unusual morphological variation, nomenclature discrepancies, and other information. Appendices include listings of the flora of Isla Clarión and Isla San Benedicto (the other major islands of the Revillagigedo Islands). Each of these islands is much smaller than Socorro and possesses a flora which is a subset of that of Isla Socorro.

This book will certainly be useful for persons studying the flora of the Revillagigedo Islands, both by those doing floristic or ecological studies, but also by those interested in biogeography. The price is very reasonable for the quality and importance of the book.

The WPA Guide to The Monterey Peninsula. Foreword by Page Stegner. University of Arizona Press, 1230 N. Park Avenue, Suite 102, Tucson, AZ 85719-4140, USA. 1990, xvi, 207 pp., \$13.95, paper. ISBN 0-8165-1145-4.

This volume is a reprint (with added prefatory material) of the book originally published in 1941 under the title *Monterey Peninsula*. The original was first published as part of a series initiated by the Works Progress Administration (WPA) during the years of the Great Depression, to help support writers who had no other means to support themselves during these years. Many regions of the country were described under this program in which local writers were employed by WPA to write guides to the tourist attractions of a given region. It was thought that the writers would be familiar enough with the area and skillful enough to write a meaningful guide for visitors.

Although changes that have taken place on the Monterey Peninsula since the years of the depression have made the book of very limited usefulness as a modern travel guide (for instance, cab fare from Monterey to Carmel is listed as \$1.00 and only those hotels charging more than \$1.00 per night for a room are included in the listing), certain aspects of the Peninsula have changed little. A number of photographs and maps are found in the book. These are important for obtaining a clear picture of where sites described in the text can be located, and an idea of what to expect to see when the particular site is visited.

A historical background for exploration and development of the Peninsula is found in the book. The historical description concentrates on the social history of the Peninsula, including scientific (botanical) history (visits by the Portolá expedition, la Pérouse, Vancouver, U.S.S. Otter, Fremont, etc.) only when, and to the extent that these visitors affected the Monterey social scene. No mention whatever is made of the time spent at Monterey by David Douglas and many other botanists.

In a historical/sociological sense, the book probably has its greatest modern value. The self guiding tourist routes described and the background information in the book highlight many of the leading citizens and institutions of the time. Some of the tours can probably still be made and the tourist can expect to see many of the same landmarks (Pebble Beach, cemeteries, monastery, physical features of the topography, etc.) as described in the book. Other tours (if one could still follow the routes described) would bear little resemblance to the descriptions in the book. It is interesting to read what were the dominant features of life on the Monterey Peninsula in the 1930's and compare with what is found there today. Rarely does one find such a detailed summary of a past society that will allow modern comparison.

Trees of Georgia and Adjacent States. Claud L. Brown & L. Katherine Kirkman. Timber Press, 9999 S.W. Wilshire, Portland, OR 97225, USA. 1990, 292 pp., \$34.95 (+ \$3.00 shipping), hardcover. ISBN 0-88192-148-3.

This book provides a summary of the trees (and a number of more shrubby species) found in Georgia. While the focus of the book is the trees of Georgia, it will be useful to individuals studying trees of any of the southeastern United States. The diversity of species treated is due mainly to the diversity of habitats (southeastern mountain and plateau, to coastal plains and swamps) in the state of Georgia. Several of the Physical Provinces (for instance Cumberland Plateau) are present in only small parts of the state, but a large number of the tree species associated with that province are found in Georgia, albeit with very limited distributions. As indicated in the preface, the distinction between tree and shrub has been made somewhat arbitrarily, with some seemingly very shrublike taxa included, and small trees excluded. On the whole, the authors seem to have taken the approach (I think a good one), "if in doubt as to tree or shrub, include it." The introductory material in the book gives brief information on taxonomy, nomenclature, use of keys, and discussion of features used for identification of plants. A brief glossary is found as Appendix D. Many species are represented by color photographs on plates separate from the text pages. These photographs are well done and will be useful to confirm identifications.

Keys to taxa are concise and easy to use, stressing vegetative features and allowing most taxa to be identified without the requirement of reproductive material. In addition to the main keys (for growing season identification), a winter key is also included in the book. There is no key to families, the primary battery of keys in the beginning of the book going directly to genera. The main text of the book consists of brief descriptions for each family, key to species within each genus, and species descriptions. Species descriptions vary greatly in length, but most consist of a range map, common name(s), limited synonymy, description, potential identification problems, habitat, and economic uses. Species are treated alphabetically within genera, genera alphabetically within families, and families according to the Dalla Torre & Harms arrangement. *Crataegus* is provided with a generic description with no attempt made to identify species by means of a key. Three species of *Crataegus* are included in the illustrations.

All in all the book appears to be very functional, and will be useful to a variety of workers. Since it is a treatment of tree species with keys that stress obvious vegetative features, and trees are very conspicuous and relatively easy to study, this would be an excellent book for beginning students of botany. On the other hand, the text is accurate and informative enough for the book to be useful to more experienced workers as well.

BOOKS RECEIVED

- A Woman's Hardy Garden.** Helena Rutherford Ely. Collier Books, New York, NY, 1990. xvii. 140 pp. \$8.95 (paper). ISBN 0-02-031840-5.
- Annual Review of Ecology and Systematics**, volume 21. Richard F. Johnston, Peter W. Frank, & Charles D. Michener (eds.). Annual Reviews Inc., Palo Alto, CA, 1990. viii. 589 pp. \$38.00 (cloth) ISBN 0-8243-1421-2.
- Biotechnology of Fungi for Improving Plant Growth.** J.M. Whipps & R.D. Lumsden (eds.). Cambridge University Press, New York, NY, 1990. x. 303 pp. \$89.50 (hardcover) ISBN 0-521-38236-X.
- Hardy Herbaceous Perennials**, volume I, A-K (pp. 1-343); volume II, L-Z (pp. 344-721). Leo Jelitto & Wilhelm Schacht. Timber Press, Portland, OR, 1990. 343 pp. \$125.00 (hardcover-with volume II) ISBN 0-88192-159-9.
- Mushrooms and Truffles of the Southwest** Jack S. States. University of Arizona Press, Tucson, AZ, 1990. 234 pp. \$19.95 (cloth), \$9.95 (paper). ISBN 0-8165-1162-4.
- Plant Canopies: Their Growth, Form and Function.** G. Russell, B. Marshall & P.G. Jarvis (eds.). Society for Experimental Biology Seminar Series volume 31. Cambridge University Press, New York, NY, 1991. ix. 178 pp. \$19.95 (paper). ISBN 0-521-39563-1.
- The Complete Illustrated Guide to Everything Sold in Garden Centers (Except the Plants).** Steve Ettlinger. MacMillan Publishing Co., New York, NY, 1990. xiv. 368 pp. \$24.95 (hardcover). ISBN 0-02-536301-8.
- The Diatoms, Biology & Morphology of the Genera.** F.E. Round, R.M. Crawford, & D.G. Mann. Cambridge University Press, New York, NY, 1990. ix. 747 pp. Price unknown (paper). ISBN 0-521-36318-7.
- The Fragrant Path.** Louise Beebe Wilder. Collier Books, New York, NY, 1990. xix. 407 pp. \$12.95 (paper). ISBN 0-02-031991-6.

The Genus *Lewisia*. Brian Mathew. Timber Press, Portland, OR, 1989. 151 pp. \$ (cloth). ISBN 0-88192-158-0.

The Healing Forest. Richard Evens Schultes & Robert F. Raffauf. Dioscorides Press, Portland, OR, 1990. 484 pp. \$59.95 (hardcover). ISBN 0-931146-14-3.

The Liverworts of Britain & Ireland. A.J.E. Smith. Cambridge University Press, New York, NY, 1990. ix. 362 pp. \$90.00 (cloth). ISBN 0-521-23834-X.

The Vascular Cambium. M. Iqbal (ed). John Wiley & Sons, Inc., New York, NY, 1990. xviii. 246 pp. \$98.00 (hardcover). ISBN 0-471-92647-7.

Trees for American Gardens, The Definitive Guide to Identification & Cultivation. Donald Wyman. MacMillan Publishing Co., New York, NY, 1990. ix. 501 pp. \$50.00 (cloth). ISBN 0-02-632201-3.

Trees of Georgia and Adjacent States. Claud L. Brown & L. Katherine Kirkman. Timber Press, Portland, OR, 1990. 292 pp. \$34.95 (cloth). ISBN 0-88192-148-3.

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Authors should arrange for two workers in the appropriate field to review the manuscript before submission. Copies of reviews should be forwarded to the editor with the manuscript. Manuscripts will not be published without review.

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